GENERAL LIBRARY
NOV 5 1918
UNIV. OF MICH.

The

British Medical Journal

The Journal of the British Medical Association.

WITH SUPPLEMENT.

No. 3013. SATURDAY, SEPTEMBER 28, 1918. **Price 1/-**

ARCHIVES OF RADIOLOGY AND ELECTROTHERAPY.

The Official Organ of the British Association of Radiology and Physiotherapy,

Monthly, 3s. 0d. net.

Contents of September Number.

REQUESTRA IN WAR INJURIES. By T. L. BUNTING, M.D., F.R.S.Ed.
A NEW TUBE-CENTREING DEVICE. By H. TREVELYAN GEORGE, M.A.(Cantab.), M.R.C.S.
A NEW TUBE HOLDER WITH DIRECTOR FOR THE RAY OF NORNAL INCIDENCE. By GEORGE G. CAMPION, L.D.S.
DISPLACEMENT OF THE AUDITORY OSSICLES SHOWN BY X RAYS. By R. W. A. SALMOND, M.D., Ch.M.
THE MOUNTING OF SYMINGTON'S SECTIONAL ATLAS OF THE NECK, THORAX AND ABDOMEN. By A. E. BARCLAY, M.D., Capt. R.A.M.C.(T.).
Report of Society, Notes and Abstracts.

Annual Subscription, payable in advance, 30s.

London:
WILLIAM HEINEMANN (Medical Books) Ltd.,
20, Bedford Street, W.C. 2.

BY C. O. HAWTHORNE, M.D.

STUDIES IN CLINICAL MEDICINE

Price 6s. net.

"A valuable miscellany of clinical studies."
—*Edin. Med. Journ.*

"Covers the ground of clinical medicine in an able manner."—*Canada Lancet.*

"Should be in the possession of every general practitioner."—*Prescriber.*

BALE & DANIELSSON, Gt. Titchfield Street, W. 1.

JUST PUBLISHED.

HYPNOTISM AND TREATMENT BY SUGGESTION.

By Dr. ALBERT E. DAVIS, Hon. Physician to the Liverpool Psycho-Therapeutic Clinic.

All Booksellers. Price 2/6 net. Post free 2/9.

"A fascinating book."—*Daily News.*

SIMPKIN, MARSHALL & Co., Ltd.: London.

MORE SECRET REMEDIES

(SECOND SERIES)

What they cost and what they contain.

Price 1s. 6d., post free.

BRITISH MEDICAL ASSOCIATION, 429, Strand, W.C. 2.

With 14 Plates and 197 other Illustrations. Demy 8vo. 15s. net; post free 15s. 6d., abroad 15s. 9d.

LEWIS JONES' MEDICAL ELECTRICITY.

A Practical Handbook for Students and Practitioners.

Seventh Edition. Revised and Edited by LULLUM WOOD BATHURST, M.D.Lond., Physician in Charge of the Electro-therapeutic Department, Royal Free Hospital (Officers' Section).

JUST PUBLISHED, with 99 Illustrations, including 16 Plates. Demy 8vo. 12s. 6d. net, post free, 13s.

THE ACTION OF MUSCLES.

Including Muscle Rest and Muscle Re-education.

By WILLIAM COLIN MACKENZIE, M.D., F.R.C.S., F.R.S.Edin., Member of Council of Anatomical Society of Gt. Brit. and Ire., and Staff of Military Orthopædic Hospital, Shepherd's Bush.

JUST PUBLISHED. SECOND EDITION. With 22 Illustrations. Demy 8vo. 8s. 6d. net; post free, 9s.

THE CAUSATION OF SEX IN MAN.

A New Theory of Sex based on Clinical Materials.

Together with Chapters on Forecasting or Predicting the Sex of the Unborn Child, and on the Determination or Production of either Sex at Will.

By E. RUMLEY DAWSON, L.R.C.P. Lond., M.R.C.S.Eng., formerly Member of Council of the Obstetrical Society of London, and Fellow of the Royal Society of Medicine.

NOW READY. Demy 8vo. With 126 Illustrations (3 in colours) from Original Drawings and Photographs. 12s. net; post free, 12s. 6d, abroad, 12s. 8d

THE PATHOLOGY OF TUMOURS.

By E. H. KETTLE, M.D., B.S., Assistant Pathologist, St. Mary's Hospital, and Assistant Lecturer on Pathology, St Mary's Hospital Medical School, &c.

London: H. K. LEWIS & Co., 136, Gower St., W.C. 1.

Now Ready. Pp. xi + 269. With 3 Charts. 5s. net.

ON ALCOHOLISM:

Its Clinical Aspects and Treatment.

BY FRANCIS HARE, M.D.,
Medical Superintendent of the
NORWOOD SANATORIUM,
Beckenham.

"Marked by candour, common sense, and moderation . . . likely to become the standard text-book."
—*British Medical Journal.*

London: J. & A. CHURCHILL,
7, Great Marlborough Street, W. 1.

With Preface by
Lieut.-Gen. T. H. J. C. GOODWIN,
C.B., C.M.G., D.S.O.,
Director-General Army Medical Service.

Just Ready.

NEW EDITION
HULL'S SURGERY IN WAR

with contributions by Col. E. M. PILCHER., C.B., D.S.O., Capt. W. MILLER, C. H. BROWNING, M.D., Capt. A. A. W. PETRIE, Col. O. W. RICHARDS C.M.G., D.S.O., Major R. H. J. SWAN, Capt H. E. H. TRACY.

2nd Edition. 210 Illustrations, including 41 Plates, 4 in Colour. 25s. net, postage 9d.

J. & A. CHURCHILL, 7, Great Marlborough St., W. 1.

OXFORD MEDICAL PUBLICATIONS

IN THE PRESS.

THE EARLY TREATMENT OF WAR WOUNDS.

By Colonel H. M. W. GRAY, C.B., C.M.G., Consultant in Special Military Surgery, late Consultant Surgeon, British Expeditionary Force, France

Cloth. Crown 8vo. Fully Illustrated.

WAR NEUROSES AND SHELL SHOCK

By Brevet Lieut.-Col. F. W. MOTT, R.A.M.C., F.R.S., Consulting Neurologist of the Maudsley Neurological Clearing Hospital, Denmark Hill, S.E.

Demy 8vo. Cloth. Illustrated in black and white, with three colour plates.

HENRY FROWDE AND HODDER & STOUGHTON, Oxford Press Warehouse, Falcon Sq., London, E.C. 1

By W. SAMPSON HANDLEY, M.S., F.R.C.S.

ILEUS DUPLEX.

AN ACCOUNT OF THIS DANGEROUS COMPLICATION OF APPENDICITIS, AND OF ITS TREATMENT.

(Hunterian Lecture, 1915)

With Coloured Plate. 2s. 6d. net.

Bristol: J. WRIGHT & SONS, LTD.
London: SIMPKIN & Co., LTD.

The only authorised preparation of Dr. Barthe de Sandfort.

AMBRINE

IS THE

IDEAL

HYPERTHERMAL

TREATMENT

OF

BURNS,

VARICOSE ULCERS, SCALDS, CHILBLAINS, &c.

ADHESIVE. OCCLUSIVE.

"The valuable physical properties of Ambrine are almost ideal."

Vide Surgery, Gynæcology and Obstetrics, April, 1918.

Chemical Colloidal Copper.

CUPRASE

IS THE

NON-TOXIC

MEDICAL

TREATMENT

OF

CANCER

INTRAMUSCULAR INJECTION.

"Dr. Gaube du Gers' Cuprase has been remarkably successful."

STERILIZED SOLUTION OF lacto-gluco-SACCHAROSE

SUKRO-SERUM

INTRAMUSCULAR INJECTION FOR TUBERCULOSIS.

The method of Professor D. lo MONACO.

SUKRO-SERUM is a solution of pure cane sugar, sterilized and specially prepared in ampoules each containing 5 cc. of the serum ready for use and should prove an invaluable asset to the busy Practitioner in cases of Pulmonary and general

TUBERCULOSIS.

In Boxes containing 10 ampoules.

LITERATURE, CLINICAL REPORTS and PRICE LISTS on REQUEST.

The ANGLO-FRENCH DRUG Co., Ltd., Gamage Building, Holborn, London, E.C. 1.

Telephone: HOLBORN 1311. Telegrams: "AMPSALVAS, LONDON."

WEST END DEPOT:—**MODERN PHARMACALS, 48, Mortimer Street, W. 1.** Telephone: MUSEUM 564.

Observations
ON
THE PRODUCTION OF MENINGOCOCCUS ANTI-ENDOTOXIN.

BY
M. H. GORDON, C.M.G., M.D.,
TEMPORARY HONORARY LIEUTENANT-COLONEL R.A.M.C.
(From the Central C.S.F. Laboratory, London.)

In a paper published in the BRITISH MEDICAL JOURNAL of January 26th, 1918, attention was drawn to the fact that the growth from young cultures of virulent specimens of the meningococcus, when killed by ether, dried *in vacuo* and powdered, was toxic to mice intraperitoneally in a dose varying from 2 to 10 mg. By carefully and thoroughly grinding 0.1 gram of this powder in an agate mortar, after the method of endotoxin extraction described by Besredka, by slowly adding 5 c.cm. of distilled water, and then centrifuging out the heavier particles, an opaque watery extract was obtained that contained enough of the intracellular poison of the meningococcus to kill mice intraperitoneally in a dose varying from 0.1 to 0.2 c.cm. Considerable differences were found in the capacity of various specimens of antimeningococcus serum to neutralize the endotoxin obtained in this manner from each of the two commonest types of the meningococcus. Some therapeutic serums, in spite of a high content of opsonin and agglutinin, proved to be deficient in anti-endotoxin. Two samples of serum, however, emerged successfully from the test, and were found to neutralize 1 minimal lethal dose of the endotoxin of both types I and II of the meningococcus with 0.5 c.cm. of serum. The first was a sample from a batch that had given far better results therapeutically in military cases than any other serum employed up to that date. At the time that the second serum was submitted to the test for anti-endotoxin it had not yet been tried clinically, but in view of its evident toxin-neutralizing qualities this serum was strongly recommended for therapeutic use during the earlier months of the present year, especially in cases infected by Type I meningococcus, for which it contained more anti-endotoxin than for Type II. The results have been exceedingly satisfactory.

From this experience, and also from the fact that specimens of multivalent serum that proved to have less therapeutic value than the two serums in question failed without exception to neutralize 1 minimal lethal dose of the endotoxin of the two commonest types of the meningococcus with 0.5 c.cm. of the serum, there is ground for believing that in the case of anti-meningococcus serum the highest clinical potency is not obtained unless the serum has a definite amount of anti-endotoxin. Nor is an excellent reason for this far to seek, since the pathogenicity of the meningococcus is admittedly due to its endotoxin. Meningococcus anti-endotoxin is by no means easy to obtain, since at present only occasional batches of antimeningococcus serum are found to contain it in any quantity. Nevertheless it would seem to be very desirable that antimeningococcus serum should possess as high a value as possible in regard to anti-endotoxin. But before serum of this quality can be prepared on a scale large enough to reduce materially the present aggregate mortality from cerebro-spinal fever further information is needed concerning the production of meningococcus anti-endotoxin. For this reason an investigation was begun for the purpose of defining the value of various preparations of the meningococcus for stimulating the production of anti-endotoxin in the rabbit.

Procedure.

Young rabbits of 1,000 to 2,000 grams weight were used and all the injections were made intravenously. The antigens compared have been (1) the raw coccus suspended in saline; (2) the same coccus after being sensitized by leaving it all night in contact with a good specimen of antimeningococcus serum, which is drawn off next morning and the agglutinated cocci resuspended in saline; (3) the raw coccus autolyzed by leaving it for three days at 37°C.; (4) the raw coccus softened and partially dissolved by suspending it in N/40 NaOH; (5) a standard suspension (0.1 gram powder to 5 c.cm. water) of the dried coccus ground up and suspended in distilled water; (6) a suspension of the dried coccus of similar strength but with the endotoxin inactivated by leaving it in the incubator overnight in contact with N/1 NaOH subsequently reduced to N/40. All of the above antigens were preserved by the addition of 0.5 per cent. of phenol.

Samples of serum have been tested for anti-endotoxin in the following way. At first a standard extract of the dried coccus was used, but later, with multiplication of the tests, it was found impossible to spare the time necessary for making these extracts, and so recourse has been had mainly to suspensions of 0.1 gram of the dried and powdered coccus ground up for about ten minutes in 5 c.cm. of distilled water and well shaken, but not centrifuged. As a preservative, 10 per cent. of ether is added, phenol being avoided because it is toxic for the mice. Such suspensions vary somewhat in toxicity according to the thoroughness of the grinding. I have preferred to use watery suspensions as a rule, but sometimes the results may be rendered more uniformly fatal in the controls by the addition of N/40 NaOH to the suspension by grinding up 0.1 gram of the powder in 2.5 c.cm. of distilled water, and then adding 2.5 c.cm. of N/20 NaOH. The objection to NaOH is that while it tends to dissolve the dried coccus it also tends, especially if too concentrated, to destroy the toxin. Before using it for the present purpose the minimal lethal dose of NaOH for the mouse intraperitoneally was determined, and found to be 0.5 c.cm. of a N/10 solution, or 2 mg. In testing serums the minimal lethal dose of the endotoxin —generally from 0.1 to 0.2 of the standard suspension—is measured out into a series of watch-glasses enclosed in Petri dishes; 0.5 c.cm. of serum is then added to each, and the Petri dish transferred to the 37° C. incubator for thirty minutes, at the end of which time the contents of the watch-glasses are injected intraperitoneally into mice, preferably of between 12 and 20 grams weight. The mice are kept under observation for two to three days. With potent toxin, of course, the life or death of the mouse is the criterion, but with weaker toxin the presence or absence of illness is a good index to the antitoxic value of the serum. To this end the mice should be individually inspected, especially on the morning after injection, and a note made with regard to their appetite, mobility, and particularly the question as to whether their eyes are open or not, for mice affected by meningococcus endotoxin tend to keep their eyes shut. When carrying out tests on a large number of samples of serum (for example, twenty or more at a time) I have found it convenient to use two specimens of the same endotoxin. In the first place, 0.5 c.cm. amounts of the samples are put up against a weaker toxin in order to separate those with any neutralizing powers from the rest; the serums thus selected are then retested against more potent toxin and their capacity to save the life of a mouse from its effects ascertained. If necessary, serums that neutralize in 0.5 c.cm. can then be tested in the same way in smaller amounts.

Four series of observations have been carried out so far, and the results may be summarized as follows:

SERIES I.

In December, 1917, eleven rabbits were prepared with Type I meningococcus, strain Howes, as follows: Two with the raw coccus, two with the same after sensitization, and two with the coccus after autolysis for three days at 37° C. The remaining five rabbits received the watery extract of the dried coccus. Throughout the experiment the dose was raised at each injection and the animals were frequently weighed.

Test 1.—On January 7th, 1918, the twenty-first day of the experiment and three days after the fourth dose, samples of blood were taken from all the rabbits and the serum tested for anti-endotoxin. Result: Five rabbits positive and six negative. The positive rabbits were: Both the animals inoculated with the sensitized coccus, both the autolyzed coccus rabbits, and one of the four rabbits prepared with the extract of the dried coccus. The injections were continued, the dose being raised further, and on February 4th, five days after the sixth dose, the test was repeated. Two of the rabbits had died—namely, one of those prepared with the sensitized coccus and one of those prepared with the extract, so that nine rabbits were left.

Test 2.—Four of the rabbits were positive and five negative. The positive animals were the rabbit prepared with the sensitized coccus, both those prepared with the autolysate and one of the rabbits prepared with the extract. The injections were continued, the dose being raised further, and on March 23rd, nine days after the ninth dose, a final test was made. Five of the rabbits now survived—namely, one of those

prepared with the sensitized coccus, both those prepared with the autolysate, and two of those prepared with the extract.

Test 3.—Only two of these five rabbits showed anti-endotoxin—namely, one of the rabbits prepared with the autolysate, and one of those prepared with the extract.

SERIES II.

While the preceding experiment was in progress another one was started in which four rabbits were prepared with equal doses of the same coccus (Type I, Howes) as follows: (1) Coccus raw, (2) coccus sensitized, (3) coccus dried, (4) coccus dried and sensitized. On the twenty-first day of the experiment, six days after the fourth dose (4,000 million cocci) had been given, the serum of these rabbits was tested for anti-endotoxin, with result that the animal prepared with the raw coccus and that prepared with the dry coccus after sensitization were both positive, the other two negative. All of the rabbits now received three further injections at intervals of a week as follows: 10,000 million, 20,000 million, and 25,000 million, and six days after the last injection another test was made, with the result that the serum of all the rabbits was now found to be negative.

Though these two experiments failed to settle the question as to which is the best antigen for evoking the production of anti-endotoxin, they nevertheless brought out the important point that for the production of anti-endotoxin to Type I it is very necessary not to raise the dose too high. So far from increasing the yield of anti-endotoxin, super-immunization may cause it to disappear.

SERIES III.

At the time that Series I was started a similar group of eleven rabbits was prepared in the same way with Type II meningococcus, strain Morgan. These rabbits received doses of the same size as those given to the rabbits in Series I, the intervals were similar and the dose was raised in much the same way. The first dose was 500 millions and the last 10,000 millions. In contrast to what happened in Series I, none of the present rabbits died during immunization—an experience that confirms a previous observation, namely, that Type I is more toxic than II to laboratory animals. No examination was made of the antitoxic value of the serum of these rabbits until they had been under preparation for a period of three months, during which time they received nine injections. Ten days after the last injection a sample of blood was taken from each animal and tested for anti-endotoxin (Type II) with the following result:

No.	Antigen.	Serum.			No.	Antigen.	Serum.		
		0.5	0.25	0.1			0.5	0.25	0.1
1	Raw coccus ...	−			7	Dried coccus ...	+	+	+
2	Raw coccus ...	+	+	+	8	Dried coccus ...	+	+	−
3	Sensitized coccus	+	−		9	Dried coccus ...	+	+	−
4	Sensitized coccus	+	−		10	Dried coccus ...	+	+	−
5	Autolyzed coccus	−			11	Dried coccus ...	−		
6	Autolyzed coccus	−							

The sign + indicates that the serum neutralized 1 minimal lethal dose of endotoxin.

It would seem that anti-endotoxin is more readily elaborated by the rabbit to Type II meningococcus than to Type I. The sensitized coccus and the suspension of dried coccus would appear to be more consistently successful than the other antigens here tried.

SERIES IV.

The next step was to resume comparison of various antigens of Type I, but with precautions against overdosage. To this end the present experiment was performed in duplicate, one set of rabbits receiving the same dose throughout, the dose being very slowly increased in the other. An interval of about forty-eight hours was allowed to elapse between the injections, and each rabbit received altogether ten doses.

The antigens compared were: (1) A suspension of the raw coccus in saline; (2) the same coccus after being sensitized; (3) the same coccus after being partially dissolved in N/40 NaOH; (4) a standard suspension of the dried coccus; (5) a suspension of the dried coccus of strength similar to the last, but with the toxin inactivated by leaving it in contact overnight in the incubator at 37° C., with N/1 NaOH, subsequently reduced to N/40.

Particulars of the mode of preparation of these rabbits are seen in the following table, which shows details of the treatment given to the five rabbits in which the dose was raised. In the five other rabbits the dose here given on the first day was repeated on all the subsequent nine occasions without being raised.

Table showing Details of Treatment in Five Rabbits in which the Dose was raised.

(The figures for Nos. 1, 2, and 3 represent millions of cocci; those for Nos. 4 and 5, cubic centimetres of standard suspension.)

No.	Antigen.	Day: 1	4	6	8	10	12	14	17	19	21
1	Raw coccus	500	500	600	600	700	700	800	800	900	1000
2	Sensitized coccus ...	500	500	600	600	700	700	800	800	900	1000
3	Coccus dissolved in NaOH	500	500	600	600	700	700	800	800	900	1000
4	Dried coccus	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08	0.09	0.1
5	Dried coccus dissolved in NaOH	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08	0.09	0.1

Two specimens of the endotoxin of the meningococcus used in this experiment were employed for testing the serum of the rabbits for anti-endotoxin. The first toxin was a strong one, since 0.1 c.cm. of it invariably killed the controls. The second toxin, on the other hand, while it produced a severe illness in the dose given—0.1 c.cm.—did not usually kill. While less stringent as a test for anti-endotoxin than the first toxin, therefore, it was more delicate. For this reason, in the tests for anti-endotoxin made after the rabbits had received the fifth and tenth injections, the serum of all ten rabbits was first of all examined against the weak toxin, and the serums that neutralized this were then tested against the stronger toxin.

RESULTS.

First Test.

On the third day of the experiment, and forty-eight hours after the first dose, 0.5 c.cm. of serum from each rabbit was mixed with 0.1 c.cm. of the strong toxin, and after thirty minutes at 37° C. injected intraperitoneally into a mouse. All the mice were dead within forty-eight hours, and cultures made from their hearts' blood were, as usual, sterile. At this stage, therefore, none of the rabbits gave any evidence of anti-endotoxin.

Second Test.

On the eleventh day of the experiment, twenty-four hours after the rabbits had received their fifth injection, the serum of each rabbit was tested against 0.1 c.cm. of the weak toxin. Six of the serums failed to neutralize it and four inactivated it, the mice remaining unaffected. The rabbits providing the successful serum had received the following antigens:

1. The raw coccus, dose stationary.
2. The dried coccus, dose stationary.
3. The dried coccus, dose raised.
4. The sensitized coccus, dose raised.

The serums from these four rabbits were now tested against the strong toxin, with the result that two failed to save the mice and two succeeded. The successful serums were those from the rabbits that had received rising doses of the dried coccus and of the sensitized coccus respectively; 0.25 c.cm. of each serum was then put up against the weak toxin, but failed to neutralize it.

Third Test.

On the twenty-first day of the experiment, twenty-four hours after the tenth dose, the serum of all the rabbits was once more tested against the weak toxin. Six of the serums failed to neutralize it and four succeeded. The four successful serums came from the rabbits prepared with:

1. The dried coccus, dose stationary.
2. The dried coccus, dose raised.
3. The sensitized coccus, dose raised.
4. The raw coccus, dose raised.

On testing these four serums against the strong toxin, the serum from the rabbit with the raw coccus failed, the rest succeeded in saving the mice. The three successful serums were now tested against the strong toxin, but only 0.25 c.cm. of serum was used instead of 0.5 c.cm. as before. The serum from the rabbit prepared with the sensitized coccus failed, the other two succeeded. Both the successful serums were then tested in 0.1 c.cm. amounts against the weak toxin, with result that the serum from the rabbit that had received rising doses of the dried coccus

neutralized it, while that from the rabbit that had received the stationary dose of this same antigen failed to do so.

Fourth Test.

On the third day after the tenth dose the serum of all the rabbits was tested against the weak toxin, but none of the rabbits previously negative was found to be other than negative again. The serum of the rabbits prepared with the following antigens neutralized the toxin:

1. The dried coccus, dose stationary.
2. The dried coccus, dose raised.
3. The sensitized coccus, dose raised.
4. The raw coccus, dose raised.

On testing these serums against the strong toxin, two saved the mice and two failed to do so. The successful serums came from the rabbits prepared respectively with the sensitized coccus and with the dried coccus, both in rising doses. On proceeding to test 0.25 c.cm. of each serum against the strong toxin, neither of them succeeded in saving the mice. Anti-endotoxin, therefore, was far more abundant in the serum of both these rabbits twenty-four hours after receiving the last dose than two days later.

Fifth Test.

On the fifth day after the tenth dose the serums of the two rabbits positive in the last test were re-examined and both found to be negative in 0.5 c.cm.

SUMMARY.

1. Multivalent antimeningococcus serum that has given the best results in military cases has been found to be differentiated from serum of less therapeutic value by the fact that the former contains a demonstrable quantity of anti-endotoxins to each of the two commonest types of the meningococcus.

2. Anti-endotoxin is elaborated by the rabbit to both the commonest types of the meningococcus.

3. In order to obtain anti-endotoxin, especially in the case of Type I meningococcus, it is absolutely essential to avoid over-dosage.

4. The antigens that appear to give best results in the rabbit are neither the raw coccus nor autolysates, but (1) a suspension of the dried coccus, and (2) the sensitized raw coccus.

THE VALUE OF X RAYS IN THE TREATMENT OF MALIGNANT DISEASE OF THE BREAST.*

BY CLAUDE SABERTON, M.D.,
HARROGATE.

THE subject matter of this paper is not new, but having had ten years' personal experience in the *x*-ray treatment of malignant disease, I propose to discuss its value in malignant disease of the breast, for the *x*-ray treatment of malignant disease in general is too large a subject for a single paper. The cases we are called upon to treat fall into three main groups: (1) Those sent for prophylactic treatment following operation, or (2) for treatment of recurrences, and (3) inoperable cases.

We will consider these groups seriatim.

PROPHYLACTIC TREATMENT.

Patients for prophylactic treatment should be sent to the radiologist as soon as possible after operation. It is essential to administer large doses of *x* rays, and the rays are measured after filtration through 2 or 3 mm. of aluminium. The scar area, axilla, supraclavicular and post-scapular areas should all be treated. With careful technique these doses can be repeated to the same skin areas once a fortnight. This method of cross fire enables a large quantity of rays to reach the mediastinum. The radiation is greatly facilitated by the introduction of the Coolidge tube. In ordinary cases the first course of treatment lasts about three months. A second shorter course is given after two or three months, and subsequent radiations are administered at gradually lengthening intervals. The patient is kept under observation for two or three years following the date of the operation. During this time it is important for the physician in charge of the case to administer blood tonics, such as iron, and give advice as to general habits of life, so that the patient's resisting powers may be built up. In some cases the administration of thyroid extract is advisable. Blood counts at intervals are a helpful guide, and last, but not least, I must lay stress on the great help and importance of optimism. The patient needs all her powers and must be cheered and encouraged in the fight.

Results.

Local scar recurrences are rare, but if nodules appear they can with rare exceptions be controlled. I have seen one or two cases in which there was a rapid spread of cutaneous nodules all over the body, probably due to a general infection of the lymphatic system of the skin. When this occurs patients usually succumb rapidly.

Slight enlargement of glands and thickening behind and above the clavicle are fairly common. We are able to prevent gross enlargement of these supraclavicular deposits, and they frequently disappear under vigorous raying. They never break down or ulcerate; I think they are sometimes possibly more of an inflammatory nature than actually malignant, and are perhaps due to some slight septic infection of the wound area. The question arises whether these supraclavicular enlargements are recurrences following the operation, or due to inability to remove infected glands at the time of operation owing to their situation behind the clavicle. Certainly supraclavicular enlargements are much more frequent than axillary deposits. I have never seen ulceration from the breaking down of secondary growths in cases that have had the benefit of an operation followed by intensive *x*-ray therapy. On the other hand, large foul fungating and ulcerated masses are frequently seen in patients not subjected to radiation.

We are frequently disappointed when all appears to be well, and there is no evidence of any local recurrence or mediastinal deposit, by patients complaining of lumbago or sciatica. It is curious how often one meets with recurrences in the lumbar spine; unfortunately at present all one can hope to do in these cases is to relieve or alleviate pain.

Swelling of the arm from lymphatic obstruction is occasionally a troublesome and distressing sequel of operations, and is most common where it has been necessary to remove a large area of skin. Owing to fixation of the tight cutaneous tissues to the thoracic wall, and the formation of taut bands of scar tissue running along the anterior fold of the axilla, the patient is from the first unable to abduct the arm. This condition materially interferes with the efficient radiation of the armpit. Usually the lymphatic obstruction of the arm gets progressively worse, and the limb sometimes reaches an enormous size. This complication is not so frequent as it was years ago, probably owing to different operative technique, and I have noticed it to be much less common in those cases in which the surgeon has carried the skin incision along the anterior fold of the axilla and not into the axilla.

The general conclusions arrived at from treatment of cases in this group are as follows:

1. The patients are less likely to have a recurrence of the disease than cases not so treated.
2. Local recurrence in the scar area is rare.
3. Supraclavicular deposits do occur, but can as a rule be controlled. These deposits never break down or ulcerate.
4. Mediastinal recurrence appears to be less frequent.
5. The general health of the patient is improved.

In view of these facts every case of scirrhus mammae should be subjected to efficient *x*-ray therapy as soon as possible after operation.

In slow-growing atrophic scirrhus mammae met with in patients about 50 years of age, cases with perhaps a history of ten to fifteen or more years, it is my experience that operation is not as a general rule advisable even though the growth may be showing signs of activity. I have seen a number of these cases after operation in which the general health has broken down, metastases have almost immediately occurred, and the patient has rapidly gone downhill. These results may be due to the removal of the old natural fibrous wall built around the tumour, and the lowered resistance of the patient following the operation. Unless the surgeon decides to employ

* Read before the Yorkshire Branch of the British Medical Association at Harrogate, July, 1918.

electrothermic coagulation, I think as a general rule this type of growth is best left to the radiologist.

TREATMENT OF RECURRENCES.

Here the question of further operative measures arises. The special circumstance of each case must be considered, but speaking generally, surgeons hesitate to operate upon secondary glandular deposits, and the patients are frequently referred to the radiologist. Much can be done to relieve pain and prevent ulceration by efficient treatment; indeed, in some cases, and frequently when least expected, brilliant results are achieved. Foul ulcerating surfaces heal up, large masses of glands disappear, and a symptomatic cure is obtained.

INOPERABLE GROWTHS.

All inoperable cases should be given the chance of deriving benefit or amelioration of symptoms by *x* ray or radium therapy, and frequently both methods are used. We can never tell beforehand to what extent a patient may respond to radiation. Very often what appear to be the most hopeless cases do best, and vice versa. When patients are already cachectic little can be done beyond giving them some relief from pain. Sometimes those taking morphine are enabled to give it up. The general health and resisting powers are, as in every other disease, all-important factors. An examination of the blood from time to time is a helpful guide in prognosis, and *x*-ray examinations of the thorax for secondary deposits should be made at intervals. Malignant growths are affected by radiation both directly and indirectly. Research has shown that cells in process of rapid division, lymphoid tissue, and the endothelium of the blood vessels are especially vulnerable to radiation. In addition to this direct local action, there is an indirect effect brought about through the reaction of the patient to the rays. In these inoperable cases inefficient treatment is worse than useless—it is dangerous, as small doses stimulate cell growth. The treatment must be pushed in massive doses to the limit, and in some instances beyond the limit, of skin endurance. An important guide, and one that it is necessary to watch carefully, is the amount of constitutional disturbance following this intensive therapy. I have known patients have a temperature of 102° or 103° for weeks following heavy treatment of this nature. I mention this as it is possible to get too great a constitutional reaction. In cases which ultimately succumb to the disease, the end frequently comes rapidly.

Before concluding, I wish to draw attention to two rare conditions which arise as a result of radiation:

1. *Late X-Ray Reaction.*—I have seen three examples of this condition. The skin and subcutaneous tissue become very tough, and assume the appearance of wash-leather and finally slough. This late *x*-ray reaction has occurred only in an area that has had a more than usual heavy bombardment of the rays owing to the dangerous and threatening character of the disease. The curious point is that this reaction develops at a date some weeks or months after the patient has ceased treatment, and is quite different from the ordinary normal erythema or pigmentation following vigorous radiation. This late reaction is very painful and takes a long time to heal. Dr. Finzi called attention to the condition some years ago. In one of the three cases which have come within my experience a large secondary mass in the anterior axillary fold had been vigorously treated with heavily filtered rays. The skin, subcutaneous tissues, and the secondary deposits sloughed away. The disease appeared to be killed in this area, and the patient was in good general health when last seen.

2. *Anaemia.*—I have noticed anaemia develop in about half a dozen inoperable cases, in patients where intensive therapy has been given for a number of years. The primary growth remained quiescent or perhaps shrank, there was no evidence of secondary deposits, and no toxaemia resulting from the cancerous mass. Death apparently occurred from general debility and heart failure. This anaemia, I think, may probably be of the same type as that which sometimes develops in *x*-ray operators, but I have no microscopic evidence to support this view. It is known that *x* rays have a profound effect on the blood.

The general conclusions drawn from the treatment of a large number of inoperable growths are that the *x* rays are of undoubted therapeutic value. Life is frequently prolonged for years, and the growths are robbed of their most distressing features. Pain is relieved or alleviated, secondarily infected glands can be controlled and prevented from ulcerating—ulcerated surfaces usually heal up and foul discharge ceases. The primary growth often shrivels or remains *in statu quo*. Inoperable growths occasionally become operable. The mental comfort derived by the patient would alone justify the treatment. In some of these cases also surgeons might with advantage employ electrothermic coagulation, but surgical diathermy has up to the present been very little used in this country.

There is perhaps a tendency for men engaged in any particular branch of work to over-estimate its value, but I do not think I have over-stated the case for employment of *x* rays in the treatment of cancer of the breast.

GUNSHOT WOUNDS OF THE KNEE-JOINT AS SEEN AT A BASE HOSPITAL.

BY

H. H. HEPBURN, M.C., TEMP. CAPTAIN R.A.M.C.

IN a recent issue of the BRITISH MEDICAL JOURNAL (June 29th, 1918) there appeared a very convincing article on the treatment of gunshot wounds of the knee-joint at a casualty clearing station, illustrating the great advance in technique employed and the gratifying results obtained. As the last word has not yet been written on this much-discussed subject, I feel it advisable to record a corresponding improvement in the results of these cases as seen in the base hospitals in France. Since the cases collected at a base hospital are necessarily drawn from a larger number of casualty clearing stations, and as so much depends upon primary treatment, one will naturally expect to find the figures a little below those of the best casualty clearing station and a little above those of the worst. I have undertaken to summarize fifty consecutive cases of gunshot wound of the knee-joint which have come under my observation since the beginning of the spring activities in March, 1918.

Before proceeding to an analysis of these cases I would like to point out that this series does not include those cases where the synovial membrane was not found to be penetrated, and at the same time to commend the practice of early and complete excision of these non-penetrating wounds, thereby preventing secondary infection of the joint in a large number of cases. It is a rare occurrence to-day at the base to find suppuration in a knee-joint when the notes from a casualty clearing station say "Wound excised, not penetrating." In the early days of the war this was unfortunately common, partly due no doubt to faulty diagnosis, but in a large number of cases probably due to secondary infection of a damaged but non-penetrating synovial membrane.

Of the fifty cases under consideration, twenty-five were complicated by demonstrable bony lesion and twenty-five were not. I shall record them under two headings: (*a*) with fracture, and (*b*) without fracture. Unfortunately the details of the primary operation performed are not all at hand. In many cases the notes simply state "wound excised" or "excised and sutured at the casualty clearing station." However, the synovial cavity is definitely stated to have been washed out and closed in twenty-seven cases—fourteen cases in Class A with fracture and thirteen in Class B without fracture. Saline solution is stated to have been employed in six cases, eusol in six, and ether in two. The remainder were not specified. Bipp was introduced into the joint in two cases and flavine in one; all three did well. The foreign bodies were "not found," or "not looked for," at the casualty clearing station in nine cases. Five of these required removal at the base. Of the remainder, one was left embedded in the femur, the other three being very small and the joints all quiescent.

It was found necessary to reopen the joint in nineteen cases out of fifty. Of these, twelve were in Class A with fracture, and seven in Class B without fracture. A partial arthrectomy was performed on one case with extensive loss of the condyles of the femur. Subsequent amputation was necessary in six of the nineteen cases—four in Class A and two in Class B. Of the latter, one was amputated for secondary haemorrhage from a separate wound. Two patients died from septicaemia, one in each class. Both

were suffering from other severe wounds in addition to those of the knee-joint. In one successful case in Class B both knee-joints were penetrated. All cases requiring more than dry dressing were treated with eusol at this hospital.

	Class A.	Class B.
Number of cases in series	25 ...	25
Known to have been washed out at casualty clearing station	14 ...	13
Nature of primary operation not known	11 ...	12
Joints requiring reopening at base ...	12 ...	7
Amputations	4 ...	2
Deaths...	1 ...	1

Since the fate of a wounded joint is largely settled at the casualty clearing station, the treatment at the base hospital is necessarily what we are accustomed to call "expectant." While it is impossible to state a danger period with any degree of certainty, I am accustomed to regard the third day after the journey from a casualty clearing station as being the end of a critical period, provided, of course, that the man has been kept at least a week at the casualty clearing station after operation, as he should be in all cases where the joint has been washed out and closed. If there is no indication of a recrudescence of the infection on the third day after his arrival from a casualty clearing station, I am usually satisfied that the patient will require no further surgical interference in France.

I do not propose to enter into an exhaustive discussion of the treatment of those cases in which delayed suppuration does occur. The personal element is a very important item, and while various surgeons employ methods differing in technical details, I believe the general principles to be practically the same in all cases—namely, the evacuation of pus and all foreign material, thorough cleansing with a minimum of traumatism, the relative abolition of drainage tubes, immobilization, and preservation of the best possible functional limb. The greatest difficulty, to my mind, is in deciding when to attempt to save or sacrifice a limb of questionable functional value, the preservation of which may mean a menace or a burden to the patient. Concerning this point I hope we shall soon get some guidance from the experience of surgeons in orthopaedic centres in England.

Repeated aspiration, with or without lavage through a cannula, has not, in my hands, given results which warrant the delay in more complete drainage. It is now my custom to aspirate only once, and if the pathologist reports an active infection, to proceed with freer drainage should the accumulation of pus recur.

I have found that suppuration occurs much more frequently in the anterior than the posterior portion of the synovial sac. This is partly due, no doubt, to the greater frequency of wounds in the anterior region, and partly, I believe, to the anatomical arrangement, which greatly favours the collection of fluid in the region of the patella. The synovial membrane appears to be more capable of dealing with invading micro-organisms when the sac is completely collapsed, so that two synovial surfaces are maintained in direct apposition without the intervention of a layer of infected fluid. Absolute immobilization, and evenly distributed support under the popliteal region, are extremely important points in the treatment. When pus does form in the popliteus bursa, thorough drainage is very difficult to obtain. The tendency is for the pus to track downwards into the leg on the posterior interosseous membrane as well as upwards along the femur, with a bad prognosis. Of the nineteen cases in this series which I drained by lateral incisions, to be described below, seven developed an abscess in the posterior pouches. Six of these were treated by incision in the popliteal space, and one by an incision in front of the tendon of the adductor magnus, with eusol injections as described below. Four of these subsequently required amputation, and one of the four died.

The offending organism in all cases reopened was the streptococcus, with or without *Staphylococcus albus*. I use a small trocar or a spinal needle for aspiration.

When a joint refills with pus after aspiration and culture my procedure is as follows:

After a preliminary injection of omnopon the patient is anaesthetized by nitrous oxide and oxygen, or ether. The splint is removed and the limb thoroughly scrubbed with soap and water followed by eusol, with as little movement of the joint as is feasible. A tourniquet is applied as bleeding from many small vessels is to be expected and the field of operation must not be obscured. An incision 3 to 4 in. long is made practically parallel to, and on a level with, the antero-external margin of the femur, the centre of the incision being opposite the upper pole of the patella. If the incision is carried down to or past the lower pole of the patella the capsule will gape unduly and retard healing, or require another anaesthetic for secondary suture. This incision is carried down to, but not through, the synovial membrane. The extra-synovial fibrous capsule is then stitched to the subcutaneous tissues by a continuous catgut suture for the entire length of each margin of the incision. This obviates the necessity for separate ligature of many small vessels, and the danger of delayed haemorrhage, in addition to protecting the divided tissues against infection when the synovial sac is later incised. A similar incision is made along the antero-internal margin of the femur and stitched in a corresponding manner. The synovial sac is then incised for the entire length of the original incision on either side. The anterior aspect of the cavity is then thoroughly irrigated with the limb in full extension. I find it an advantage to have the operating table inclined slightly towards the foot for drainage, avoiding the encumbrance of receptacles. A large quantity of warm water or saline solution is used, at least a gallon, followed by a pint or two of eusol. No instrument is introduced into the joint other than the nozzle of an irrigator and a gloved finger.

The knee is then flexed and a rubber tube, or No. 8 catheter, attached to an irrigator is introduced first between, and then along either side of the condyles of the femur. Another gallon or more of saline solution and a quart of eusol are allowed to run in. Meanwhile the leg is alternately flexed and extended by an assistant or by the surgeon with a finger hooked under the quadriceps tendon. It is difficult to say just how much solution actually reaches the popliteal bursa, but pus can be readily seen in the return flow. The anterior pouches are again washed out with eusol and the tourniquet removed. Four Carrel tubes are introduced into the joint, two directed upwards under the quadriceps tendon and one down either side of the patella to the joint line. The inferior pair of tubes must not be insinuated between the femur and the tibia, as it is hoped that the joint will become shut off into an anterior and a posterior cavity, the latter being left to take care of itself, as it did in twelve out of nineteen cases in this series quite satisfactorily. For the same reason I apply no extension whatever. A superficial eusol dressing is then applied, no gauze entering the synovial sac. The limb is then placed on a splint.

I am now using the Thomas knee splint, with about ten degrees of flexion, and without any extension. Absolute fixation by this means is, I admit, difficult to obtain, but on the whole it is more satisfactory than any splint I have seen used, largely because it interferes so little with the circulation, which is an important point, and because it facilitates dressing with a minimum of disturbance, especially if sectional flannel supports be employed. A foot support is of course essential, and the ring of the splint should fit the patient.

The post-operative treatment is—two-hourly injection of half an ounce of eusol into each of the four Carrel tubes, with one thorough daily irrigation for three days. The tubes may be changed daily if they become blocked. At the third daily dressing the tubes are all removed and replaced by two tubes, which lie in the incisions but not within the synovial sac. On the fourth day the last through-and-through irrigation is given to remove any loose débris. From this time onwards only superficial tubes and dressings are employed, and the incisions in the synovial sac encouraged to close. They are usually sealed up by lymph on the fifth or sixth day. An accumulation of pus may recur in one or both sides, and require the reintroduction of a tube for another three days. I have repeated this procedure up to three times with ultimate success. I have arrived at the three day unit of treatment by experience and a process of exclusion.

If, as sometimes happens, pus collects in the popliteal region it must be dealt with on lines similar to those I have indicated above. Periarticular oedema or actual cellulitis is often troublesome, especially in the presence of extensive wounds. Once the synovial sac is securely sealed up I have found the frequent application of boric fomentations to be of great value in these cases.

Movement of the joint must not be encouraged too early on account of the great danger of stirring up and liberating infection. I hesitate to state a time, but have been accustomed to start gentle passive movement when the synovial sac has been closed and the temperature under 99° F. for ten days. In one very favourable case I began after five days. The result was a "flare up" which set the patient back a full month.

Anything I might write concerning the future functional value of these limbs would be rather a vague estimate, as in past years I have found it difficult to keep in touch with

anything like a useful number of cases, or their records, for a sufficiently long time after their evacuation from France. Except when the military situation demands it, a patient is not fit for evacuation from France until he is at least fit and ready for passive movement.

In conclusion I would like to call attention again to the widespread desire of surgeons serving abroad to hear more of the ultimate results of cases which pass through their hands. Our colleagues on home service are apt to forget that some of us have been in France for four years and are consequently more or less in ignorance of many facts which they may regard as common knowledge.

SOME ASPECTS OF MILITARY OPHTHALMOLOGY.*

BY

COLONEL S. HANFORD McKEE, C.M.G.,

OFFICER COMMANDING WEST CLIFF CANADIAN EYE AND EAR HOSPITAL.

MILITARY differs widely from civilian ophthalmology, and varies widely, according as the work is done in training camp, at the base, or in one of the various parts of the various fields.

One of my first impressions at camp was that it was essential to have in a military hospital unit someone with a special knowledge of ophthalmology. One's first duty, the examination and classification of recruits, very definitely demonstrated this. An examination which consists only of sight testing must prove unsatisfactory. The soldier should always have a good field of vision in each eye, and his eyes should be practically free from disease. Whilst conditions are bound to change, standards of vision that have been latterly adopted seem to me fairly satisfactory. I would certainly recommend no further lowering of the standard.

Much depends upon the individual, whether he is "keen" or not. I consider a soldier who is anxious to do his duty and has only $\frac{6}{24}$ vision in each eye infinitely more useful and a better soldier in every respect than the disgruntled man with $\frac{6}{6}$ in each eye. There is also a certain proportion of men with mental amblyopia, among whom the amount of vision is not much of an indication of their usefulness. The military point of view should teach a medical officer "to size up" his patient, and considerable latitude should be allowed to the military ophthalmologist as to who "sees to shoot" and who "sees enough for ordinary purposes." If the standard of vision had been adhered to, I feel sure millions would have been saved to this country. Lowering the standard of vision will increase the number of passed recruits marked "fit for service," but it will not increase the number of bayonets, and it will very materially lower the efficiency of the army.

The Canadian Medical Service has been far in the vanguard in this respect. The appointment of an officer specially qualified in ophthalmology to a position in a field ambulance, to attend to special work in certain areas, marks a big step forward in military medicine. Unfortunately there are still many specially trained medical officers who are enshrouded in that wondrous work "administration."

Unless a soldier's vision is improved considerably by glasses he will not wear them, so that there is only one reason which warrants prescribing glasses for a soldier—namely, that by prescribing glasses you change him from an unfit to a fit soldier. To my mind there is no other excuse which warrants putting glasses on a soldier, for it is to be remembered that if a soldier can get along without glasses he will, especially since gas masks have come in vogue; and it is a grave mistake to prescribe them, for when you do you supply him with an excuse which he always has for lining up on the sick parade. A man who breaks his glasses or a man wearing glasses who complains of headaches is immediately sent away for examination, and avoids a duty which he does not wish to perform. It is to be remembered that in a soldier complaints of headaches or pains of any sort are not reliable symptoms of disease. I opened two mastoid processes in France before I found out that pain was not a reliable symptom of disease, certainly not in a soldier wishing to get to "Blighty." Again, in the healthy out-of-door life of a soldier errors of refraction should not cause headaches. Pains in the head of all kinds, photophobia, and night blindness are frequently complained of; the actual visual defect seems to be the last complaint thought of. Amongst soldiers there is a tendency to exaggerate a natural defect, so that the estimation of the real error is by no means simple. I consider the wholesale refraction of troops and the supply of glasses to combatant forces a grave mistake. When glasses are ordered they should be as simple as possible. It is a mistake to give a soldier with normal vision lenses correcting small degrees of astigmatism and hyperopia.

During the examination for refraction a variety of defects are found, and prominent among them amblyopia ex anopsia. From observation I feel sure that I have seen cases of men who have had normal vision before proceeding to France, and who from the effects of high explosives are now men with a high degree of myopia. Patients have also been seen of very high amounts of astigmatism (5 or 6 dioptres in each eye) who in civilian life were at such work as engine drivers, where routine examination of their vision was made. They say it would have been impossible for them to have carried on their civilian work with such visual defects. I know of no explanation of this defect, except the effect of high explosives.

I have not seen an epidemic of conjunctivitis amongst soldiers and very few cases of gonorrhoeal ophthalmia. Trachoma (or ophthalmia militaris of the last century) has almost disappeared as a military disease. The importation of labour into our army from the East may, however, alter this. The absence of an epidemic of conjunctivitis and the absence of trachoma is of interest considering the condition of Europe during the Napoleonic wars. Historically it may be of interest to recall to your minds the fact that Hannibal's army was incapacitated for one winter in Italy with ophthalmia. Following the original gas attack in France in April, 1915, there were a large number of cases of conjunctivitis. Conjunctivitis has been seen associated with dysentery often enough to excite notice. Whilst in the East, recovering from dysentery, I myself developed severe conjunctivitis. This was prodromal to an acute rheumatic condition. The appearance of severe metastatic conjunctivitis preceding an acute rheumatism has been noted.

Amongst military symptoms of disease night blindness takes a prominent part. It has been met with frequently, and in a number of cases has been associated with true retinitis pigmentosa. Nyctalopia in soldiers has been put down by some as a symptom of neurasthenia. This, from observation of the cases that have come under my care, is, I think, a mistake. Functional night blindness was well recognized before the war, and nyctalopia has been reported as endemic in certain countries, especially in Russia during the lenten fasts. It seems to me that we may well attribute this complaint or disease in a certain number of cases to the exposure, hard work, and great fatigue consequent on service. There is, however, no doubt in my mind that many soldiers have heard a chum complain of night blindness with the desired result, and have then gone and done likewise. A clever malingerer finds it an easy complaint to simulate, and the simulation is hard to detect.

The result of Wassermann reactions amongst individuals of military age may be of some interest. In 105 cases of iritis the reaction was positive in 33 and negative in 72. These are remarkable figures when one considers the age of the majority of the patients and the relation between venereal disease and active service. In 4 cases of retinitis pigmentosa the reaction was negative; in 11 cases of optic neuritis it was positive in 5, negative in 6; in 7 cases of interstitial keratitis the reaction was positive in all; in 30 cases of retino-choroiditis 15 were positive and 15 negative. To my mind syphilis of the eye reacts better to treatment by inunctions of mercury than to any other.

Among, in round numbers, 3,000 ophthalmic cases admitted to West Cliff Eye and Ear Hospital I have seen two cases of sympathetic ophthalmia.

The concussion following modern explosives leads to a great variety of fundus lesions. The injuries are caused by the violence communicated through the bones of the skull, the bones of the orbit, or by air vibration—windage. One of the commonest of these lesions I have not seen described;

* Abstract of a paper read at the Oxford Ophthalmological Congress, July 12th, 1918.

it is a condition of traumatic retino-choroiditis characterized by diffuse cloudiness of the retina, numerous small exudates in the choroid, and fine dust-like opacities of the vitreous. It is identical with retino-choroiditis of secondary syphilis. It varies in degree from a very slight opacity of the vitreous to diffuse thick opacities with changes in the choroid. I have seen a large number of such cases in which I am positive the changes were due to trauma (windage).

Surgery forms one of the most interesting parts of military ophthalmology, though no occasion arises for performing many of the operations of civilian practice. One reason, and one reason alone, should form the basis for all military operative work—necessity. It is most unwise to correct strabismus, for instance, for cosmetic reasons, or to do any operations of a similar nature. If a recruit is accepted for service with a disability of this kind, and an attempt is made to correct it, he first becomes a hospital patient without being ill or wounded (in itself most undesirable), and secondly he is given the starting point for an attempt to obtain a pension. Dacryocystitis is not infrequently met with in military work, and for military purposes, and the same would hold among industrial workers in civilian life. I can very strongly recommend the West operation.

Esser, in his article in the *Annals of Surgery* (March, 1917), forecasts considerable increase in the types in which his method will be useful, and already important progress has been made. Major C. W. Waldron, C.A.M.C., first undertook charge of the face injuries service at West Cliff Canadian Eye and Ear Hospital. This service, in need of greater space, was later moved to a Canadian General Hospital, and later to the Queen's Hospital, Sidcup. Major H. D. Gillies, R.A.M.C., and Major Waldron have improved on Esser's methods, and given us a most valuable means of remedying many of the war distortions of the lids by a method of epidermic outlay as compared with Esser's epidermic inlay. Major Waldron has modified Esser's method by making the incision in the conjunctival sac instead of through the eyelid skin. Major Gillies has made two modifications of the Esser process. The first method consists in burying the graft covered mould in the subcutaneous tissues of the eyelid through an incision in the skin, and removed through that incision. By this method the eyelid skin is increased to the extent of the graft. This is especially useful in contractions following burns. The second method may be termed an epithelial overlay.

The subject of military ophthalmology is so large that I have only been able to touch here and there on some of the essential features. I hope, however, that I have been successful in drawing attention to what an essential part of military medicine ophthalmology really is.

It is to the credit of the Canadian Army Medical Service that at a very early period of the war the necessity for a special hospital was noted, and that in October, 1915, the West Cliff Canadian Eye and Ear Hospital was opened with a capacity of 105 beds. There were 3 administrative and 4 medical officers, 10 nursing sisters, and 27 other ranks. From that beginning the hospital has increased until at the present time it has an establishment of 400 beds, 12 officers, and 40 nursing sisters. There have been admitted to hospital 9,854 cases, and there have been 49,906 consultations in the out-clinic department. Here are prepared the special reports so essential for medical boards, for categorization, for pensions, and for the final disposal of men. Much credit is due to Colonel J. D. Courtenay of Ottawa, who by his initiative had a great deal to do with the establishment of the hospital. By his persistence he saw that it was properly equipped, and by his foresight made the necessary accommodation for its possible growth. The hospital was originally intended to be the head of the Canadian Ophthalmic Service, where civilian ophthalmologists would be sent for military training. Unfortunately, war is a time of changes. We are, however, practising military ophthalmology in as conservative and in as scientific a manner as possible. We have all the equipment, including library and laboratory, necessary for such work, and hope a sufficient number of civilian ophthalmologists are being trained for useful military duty. These officers will later be called on to decide many important questions: What eye injuries and diseases are due to service? What is the relation between wounds of the cranium and defective vision? Is loss of central vision without macular changes in soldiers due to service, and is it pathological or functional? What injuries are due to "windage"? What is rational treatment for malingering, functional amblyopia, war neuroses? What is the amount of disability due to haemianopsia? All these and many other questions of a professional nature, and many medico-legal questions, must be decided by us with fairness to the individual and to the State.

A CASE OF FATAL JAUNDICE.

BY

RAWDON A. VEALE, B.A.OXON., M.D.LOND., M.R.C.P.,
TEMPORARY LIEUT.-COLONEL R.A.M.C.(T.F.),

AND

B. H. WEDD, M.D.LOND.,
CAPTAIN R.A.M.C.

AMONGST the complications and sequelae which attend the administration of salvarsan or allied compounds not the least important is that of jaundice. In his paper on the treatment of syphilis Harrison[1] places jaundice twelfth in his list of clinical side-effects and states that it occurred in 0.6 per cent. of his cases. Deaths due to this cause have been recorded, and consequently we have thought the following case worthy of record.

Pte. P., aged 30, was admitted to a general hospital at 10 p.m. on April 10th, 1918, having been transferred from a casualty clearing station to which he had been admitted on the previous day. His field medical card contained the following entries: "Aching all over for two days. Profuse sweats. Tongue furred. Temperature 101°." The initial diagnosis was influenza. He was obviously gravely ill; his condition, indeed, was such that minute questioning was not feasible. However, he was able to supply the information that he had always been a strong and healthy man, but that he had contracted venereal disease in Italy in the latter part of 1917 and had been subsequently treated with "injections," details of which are given below. He was distinctly but not deeply jaundiced; he was extremely restless and, though conscious, his mind wandered at times during the examination. Vomiting was frequent and distressing, and the vomitus resembled the black vomit of icterus gravis. The lips were cyanosed and the pulse was weak (100). The temperature (97° on admission) remained subnormal throughout. There was tenderness over the liver and spleen, but no obvious alteration in the size of these organs. There were no subcutaneous haemorrhages, and no other physical signs worthy of note. The knee-jerks were present. The urine contained albumin, but no other abnormal constituent. Treatment was begun on the lines of free purgation with salines and the administration of alkalis, but the patient grew rapidly worse. He became noisy and wildly delirious, and death finally occurred on April 12th at 3.30 a.m.

Notes kindly supplied by the medical officer in charge of the patient when under treatment for syphilis provide the following additional information: When admitted to hospital on January 15th, 1918, the man was suffering from a typical hard granulating sore on the corona, which appeared at the end of December, 1917; there was general adenitis, but no other signs or symptoms. He was treated with intravenous injections of 0.6 gram of novarsenobenzol on January 15th, 18th, 21st, February 5th, 8th, 24th, 27th, and March 2nd. No reaction followed on any of these occasions. He also received intramuscular injections of metallic mercury, as follows: ¾ gr. on January 15th, and 1 gr. on each of the following dates: January 22nd, 29th, February 5th, 12th, and March 3rd. There was a suppurating bubo on January 22nd, which was reported healed a week later. On February 24th a slight stomatitis was noticed. The patient was discharged to duty on March 4th.

Thus it will be seen that there was an interval of some five weeks between the last intravenous injection and the appearance of symptoms of the fatal illness.

Post-mortem Examination.

Body well nourished; definitely jaundiced. *Post-mortem* staining present. Larynx and trachea normal, as was the oesophagus but for one small submucous haemorrhage. The bronchi contained blood clot and mucus; there was no fluid in the pleural cavities nor any evidence of pleurisy

seen. The pleural surface of the lungs showed numerous dark convex areas resembling the condition resulting from infarction. On section these were found to be due to recent haemorrhages, the majority immediately beneath the pleura, the rest widely scattered throughout the substance of the organ. Portions excised felt partly consolidated, but floated in water. The heart weighed 10 oz. The muscle was pale, the valves normal. There was no marked alteration in the size of the liver; it weighed 36 oz. On section the liver substance was firm, with a distinct nutmeg appearance. The gall bladder was normal. The spleen weighed 4½ oz.; its substance was dark purple, moderately firm. The pancreas and suprarenals appeared normal. The kidneys weighed 6 oz. each and were somewhat large and pale. The capsules stripped readily and left a smooth surface. The stomach, duodenum, and intestines were normal, and nothing abnormal was detected in the brain.

Histological Examination.

We have to express our thanks to Dr. J. A. Murray, of the Imperial Cancer Research Laboratory, who kindly undertook the preparation of these sections, for which we had no facilities, and gave us his opinion upon them.

Liver.—Sections show striking changes. The parenchyma cells are shrunken and separated from one another, appearing to have undergone degeneration. There is some overgrowth of the interstitial connective tissue and proliferation in the portal areas. Tissue for the staining and demonstration of fat was not preserved.

Lung.—The lung shows recent haemorrhages into the alveoli, probably due to infarction. The walls of the alveoli appear normal.

Kidney.—The cells of the tubules show vacuolation, probably due to fatty changes. There is little alteration of the interstitial tissue.

REFERENCE.
[1] *Quar. Journ. Med.*, June, 1917.

A CASE OF SUCCESSFUL CAESAREAN SECTION FOR ECLAMPSIA.

BY

E. W. G. MASTERMAN, F.R.C.S., M.D.,

MEDICAL SUPERINTENDENT OF CAMBERWELL INFIRMARY.

IN connexion with the article by Dr. Strachan on toxaemias in pregnancy, which appeared in the BRITISH MEDICAL JOURNAL of August 3rd, and the letter of Dr. McCann on the same subject on August 10th, it may be of interest to report a case of Caesarean section for eclampsia done a few days before the article appeared. I think most medical men will agree that in this case the result has fully justified this method of treatment.

A. R., aged 31, had enjoyed good health till her marriage. She had first a three months miscarriage and in 1914 had an eight months child, now living. In 1916, when pregnant for the third time, she had severe albuminuria with anasarca. She refused a bed in Guy's Hospital, but was delivered of an eight months child (which lived four months) at home and afterwards went into the Clapham Maternity Hospital for the kidney trouble. The disease cleared up. In 1917 she had another miscarriage (cause unknown) at three months. On June 3rd, 1918, she was admitted to Camberwell Infirmary, seven months pregnant, with acute bronchitis and severe albuminuria and haematuria. Under treatment the bronchitis cleared up and the blood disappeared from the urine. When she insisted on discharging herself—against strong advice—on July 4th, there was only a trace of albumin in the urine.

We saw no more of her until July 27th, when she was brought to the infirmary by ambulance in an acutely delirious condition with the history that she had had during the previous twenty-four hours twenty fits of eclampsia, as well as severe vomiting. Within four hours of admission she had four more typical eclamptic fits. The urine proved to be loaded with albumin; there was anasarca of the legs, and the patient's condition appeared to be urgent in the extreme. The temperature was 97°. Labour was not due for another month; the cervix felt hard, and the os only admitted two finger-tips. There seemed to be no labour pains. A careful examination failed to reveal any fetal heart sounds, and I concluded that the child was dead.

I decided that her history and condition justified immediate Caesarean section, and at 10.30 p.m. I performed the operation in the usual way, which I have found advantageous for controlling the haemorrhage—by drawing the uterus outside the abdominal cavity before emptying it. On opening the uterus the child was found to be dead, with the head lying deeply in the pelvis, necessitating some little force in extraction. The placenta and membranes were removed, and the uterus was sewn up with one layer of deeply placed silkworm-gut sutures and an outer layer of superficial catgut sutures to cover the scar. As the patient was clearly unfit for further pregnancies, I excised 1 in. of the inner part of each Fallopian tube and bound the proximal stumps in the uterine substance, covering the place over with peritoneal flaps. The abdominal wall was closed in layers in the usual way. The patient lost a very moderate amount of blood, and the whole operation took just over half an hour.

The result has been very satisfactory. The patient, who was comatose before the operation, was bright and intelligent the next morning. She knew nothing of what had happened, but was delighted to hear what had been done. The temperature reached 100.4° that day, owing, I think, to a certain degree of bronchitis, but never reached 100° afterwards. Since the operation there have been no more fits, no vomiting, and no headache. The bronchitis has cleared up, and the urine, which has increased in quantity, now has only a trace of albumin. The wound has healed, and the stitches have been removed. The oedema of the legs has quite gone.

The patient is now getting up, and is apparently in normal health (August 30th, 1918).

This brief outline of a case done so recently with such immediately successful results is sufficient, I think, to commend the performance of this straightforward and by no means difficult operation in suitable cases. Had I had reason to believe the child was alive at the time of the patient's admission, the argument in favour of Caesarean section would have been still stronger.

THE TREATMENT OF IRRITANT GAS POISONING.

BY J. M. LAZENBY, CAPTAIN R.A.M.C.

IN the following notes the treatment suggested applies to all cases of irritant gas poisoning when the symptoms are those of acute catarrh of the mucous membranes of the eyes and of the respiratory tract. With various modifications it has been employed on this ship for the past three months, and gives very satisfactory results. My experience is that success depends entirely on the care with which the method is carried out and the frequency of the treatment.

INSTRUCTIONS TO ORDERLIES.

1. Before embarkation begins furnish a dressing table with a throat spray, eye bath, Carrel syringe, vaseline, plain gauze cut to size, cotton-wool, jaconet, bandages, and one pint of a warm solution of sodium bicarbonate—10 grains to the ounce. Cover with a clean towel.

2. After embarkation is complete, select all the severe eye cases whose eyelids are closed through photophobia or dried secretion, and place over the eyes a compress of gauze wet with the solution. When the milder cases have been dealt with the severe ones will be ready for treatment, the compresses having unsealed the eyelids and relieved the acute photophobia.

3. Bathe the margin of the lids till all the crusts can be wiped away with a wet cotton-wool mop.

4. Fill the syringe with solution, and, taking a piece of cotton-wool in the left hand, draw down with it the lower lid. Instil a few drops into the eye from the syringe, and close the lids. Repeat this till all secretion has been washed away—about four times. Dry the skin with cotton-wool.

5. In mild cases leave the eyes uncovered except by the eye shade. In severe cases put on another compress, cover with jaconet, and bandage lightly on.

6. In all cases it is better to smear a little vaseline on the skin to prevent irritation from the discharge.

For the throat (respiratory) cases proceed as follows:

1. Fill the spray half full with the solution.

2. The patient sits up and gargles his throat and mouth with the solution. He then opens his mouth wide and breathes in and out. The spray nozzle is held an inch from the mouth and the jet directed to the back of the throat. The patient *must* sit up and respire during spraying.

3. Cease when the patient wants to spit out, and repeat four times.

4. When patients are numerous, all cases who can see to use the apparatus should be instructed to carry out the treatment for themselves, using an eye bath for the eyes instead of the syringe.

5. Since success depends largely on frequency of treatment, patients must be dealt with every three hours. The last application should be made before lights go out at night, and in all severe eye cases the compress must be placed in position and secured with a bandage

In a ward containing gas cases and other affections of the respiratory organs the former are kept on one side. When the percentage of gas patients is large the orderlies always suffer from irritation of the throat and cough. The other patients also cough more than they should for the same reason. It is therefore advisable, when possible, to isolate patients suffering from gas poisoning.

As regards results: Photophobia is either completely relieved or markedly diminished, so much so that patients coming on board unable to open their eyes are sometimes found, without their shades, looking at pictures and reading. The catarrh of the eyes still persists, but the pain is much relieved.

In throat cases the immediate result is the expectoration of a large quantity of purulent mucus. The dry cough becomes loose and the pain in the chest lessened. The soreness of the throat usually persists. The chief benefit obtained is relief from the distressing night cough. These patients generally have a good night's sleep, and the whole ward is, in consequence, quieter.

Chronic cases of two or three weeks are not materially relieved by the treatment. Our most successful cases are from three to six days old. The treatment is cheap and simple, and is suitable for all cases in transmit from the clearing stations to their destination in England. Since we have them for so short a time on board ship, I cannot say whether it is curative, but from the relief obtained I believe that if these cases were treated continuously from the beginning the period of convalescence would be materially shortened.

THE ADMINISTRATION OF ANAESTHETICS TO SOLDIERS.

BY

ARTHUR MILLS, M.D., TEMP. CAPTAIN R.A.M.C.,

LECTURER IN ANAESTHETICS, UNIVERSITY OF ST. ANDREWS.

SINCE the beginning of the war I have had considerable experience in the administration of anaesthetics to soldiers in this country—in the first instance, to soldiers in a war hospital suffering from wounds and invalided home from the fronts, and latterly to young soldiers in full training admitted to a camp military hospital to undergo some operation. The two classes really differ considerably as regards type. The large majority of the former have been confined to bed for at least a few days, and are "invalids," and differ very little, as regards my subject, from the usual type of hospital patient in civil life. At the camp military hospital, on the other hand, we are constantly meeting with the young, athletic, well developed man of 18 to 21 years of age engaged in a period of intensive physical training. Frequently the operation is a trivial one, and admission to hospital the day previous to the operation is considered sufficient for the purposes of pre-operative preparation. The nervous system of the young soldier is by no means stable. He is frequently far more "nervous" than a woman. His reflexes are exquisitely sensitive. He is in hard muscular condition. He is nearly always a heavy cigarette smoker. We have thus many factors which go to make up a type difficult to anaesthetize safely and satisfactorily.

It must at once be laid down in the most emphatic manner that for such cases induction of anaesthesia with chloroform is strongly contraindicated. Should the attempt be made to anaesthetize with chloroform, it will be found that the large majority of these men develop excitement and struggling and spasm of the limbs and respiratory muscles. If at the moment of onset of such a state of spasm a strong chloroform vapour has been inhaled, it may be retained in the pulmonary alveoli for a considerable time, the percentage of chloroform in the circulating blood may be raised to a toxic degree, and fatal symptoms may appear while the corneae are still sensitive. The heart, indeed, gives way before breathing can be re-established.

It is exceedingly doubtful, too, whether a mixture of chloroform and ether is safer than pure chloroform during the induction period. The difference in degree of volatility of the two substances forms the difficulty. If any anaesthetic effect whatever is to be obtained from the ether element in the mixture, measures must be adopted to exclude the air to some extent, and exclusion of air is not permissible if the chloroform element be present in any degree. Again, if the mixture be administered by anything resembling the constant drop method, or if the successive "doses" poured on the mask be too frequently repeated, we must remember that the proportion of chloroform in the vapour inhaled by the patient is rising to an unknown extent. My experience, indeed, goes to show that the result obtained by induction with a chloroform and ether mixture is the same as that obtained with pure chloroform.

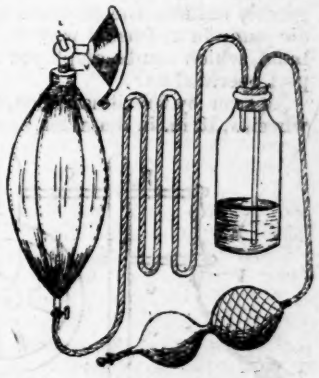
Induction with pure ether, again, is attended in these cases with considerable difficulty. A large proportion of them have a certain degree of pharyngitis from excessive cigarette smoking, and coughing and choking are common phenomena.

Nitrous oxide gas produces too light and evanescent an anaesthesia in these robust subjects to form a satisfactory prelude to ether, and any attempt to prolong it by administering more gas results in undesirable cyanosis.

I have come to the conclusion, therefore, that an ethyl chloride–ether sequence is the best method we can adopt for induction, and have devised a method of using this sequence which I should like to bring to the notice of others.

I do not think that the majority of administrators use ethyl chloride in the most satisfactory manner. Although we quite realize that it is not quantity of anaesthetic used, but strength of vapour inhaled, that is the determining factor in producing anaesthesia, I find that in books on the subject, such as Hewitt's and Buxton's, this principle is fully realized when discussing chloroform or ether, but it is thrown aside when treating upon ethyl chloride. We are told, for example, to give so many cubic centimetres to a child and so many to an adult. This method would be all right so far if we could be sure that the quantity of ethyl chloride prescribed could always be vaporized in a desired and known quantity of air. We cannot be sure of this. Again, it is impressed upon us in administering chloroform and ether that the patient should be *gradually* put under with a steadily increasing strength of vapour. With the recognized methods of giving ethyl chloride, on the other hand, there is nothing to prevent the patient getting the full strength of the vapour with his first inhalation, a really dreadful experience for the patient, and associated with considerable danger. For the past five or six years I have constantly used an inhaler for ethyl chloride devised by Mr. C. J. Loosley, anaesthetist, Hospital for Children, Great Ormond Street, and have given many hundreds of administrations, including about 300 to soldiers (early in the war) undergoing dental extractions. To have a stopcock fitted to the foot of the bag and this connected by rubber tubing with an ether bottle and bellows was an easy matter, and this forms the simple apparatus which I now use in giving the ethyl chloride-ether vapour sequence.

To indicate briefly how the apparatus is used, and quoting freely from Mr. Loosley's description of his inhaler, about 3 c.cm. of ethyl chloride are sprayed into the bag through the valve V. This valve opens when the nozzle of the ethyl chloride tube is pressed against it, and closes automatically immediately the nozzle is withdrawn, a tube below carrying the discharge well away from the face-piece. The face-piece is applied to the patient's face and the lever of the two-way cock L kept in the down position so that the first few breaths of the patient are turned into the bag till it is about half full. The lever L is now pulled upwards towards the face-piece and the patient breathes a dilute mixture of ethyl chloride vapour and air. Dilute ethyl chloride vapour is quite pleasant to breathe. A vapour sufficiently strong to produce anaesthesia is pungent and produces a sense of suffocation. The vapour is now strengthened by spraying a little more ethyl chloride through the valve, and still a little more until anaesthesia is produced. The patient is now, as a rule,



breathing vigorously, but there is abundance of air in the bag and he can take a full breath without emptying it.

Using ethyl chloride alone we can safely push the anaesthetic till we have the usual signs—fixed eyeballs, dilated pupils, and insensitive corneae—before removing the face-piece, and a good minute and a half or more of satisfactory anaesthesia without trace of cyanosis will be obtained. Using it in sequence with ether a profound ethyl chloride effect is not desirable, and as soon as unconsciousness is produced ether vapour may be pumped into the bag by means of the hand bellows. The strength of ether vapour can be varied within any limits by varying the degree of vigour of pumping and by the admission of more or less air at the face-piece. The apparatus is very economical as regards amount of ether used, a certain amount of rebreathing being involved, and, if desired, a much stronger vapour can be obtained than by using a Clover.

I contend that the method is a safe and highly satisfactory one for the induction of anaesthesia, especially for the difficult type of patient under consideration, and it is also a satisfactory apparatus to use in maintaining anaesthesia in the large majority of operations in a camp hospital.

I think that most administrators will agree that quick inductions and closed inhalers tend to be associated with vigorous respiratory movements. In abdominal cases I therefore prefer a slow induction with chloroform and an open mask, changing to ether and an ether mask and the drop method before the dangerous period of excitement supervenes. Fortunately abdominal cases rarely come to operation while yet in a state of youthful vigour, and thus do not present the difficulties I have been discussing. In conclusion, I am convinced that the previous hypodermic administration of $\frac{1}{8}$ gr. morphine and $\frac{1}{100}$ gr. atropine is of considerable value. The hypodermic should be given no matter how trivial the operation may be.

Occasionally the nature of the operation demands the use of chloroform, but after the induction period is over and full narcosis has been produced these young soldiers take chloroform well.

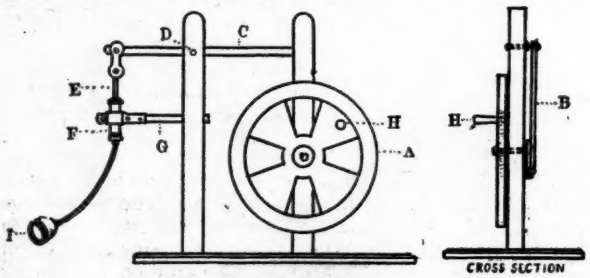
Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

AN APPARATUS TO FACILITATE THOMAS'S SUCTION TREATMENT.

MEMBERS of the profession who use dry cupping as recommended by Hugh Owen Thomas (of Thomas's splint fame), whose ideas have been appropriated and elaborated by the German Dr. Biers (a name we have too long permitted to eclipse that of the originator of the method), may be glad to hear of an apparatus I have invented that not only greatly reduces the physical work entailed in working an air pump in the usual way with both hands, but frees one hand, which can be employed in adjusting the cup to the part operated on.

As seen by the illustration, the apparatus consists of a wheel, A, 18 in. in diameter, moving in a vertical plane with



a crank axle that moves a vertical rod, B, up and down. The latter moves the lever C, which rotates on the pivot D. The piston E of the air pump F (which is fixed rigidly in the clamp G) is attached to the end of the lever C, and is moved up and down by the latter. The wheel is kept in motion by the hand at handle H. A pedal can easily be fixed and the movement maintained by that means. A cup, I, is attached by stout indiarubber tubing to the nozzle of the air pump. The apparatus (without the pump) may be obtained from Mr. T. Pottinger, Markham Road, Winton, Bournemouth.

Thomas's method used in this powerful way has been found to be of the utmost use in relieving pain due to locally inflamed areas, lumbago, sciatic pain, spinal irritation. Its use is suggested in a great number of ailments, amongst others, those in which the stage for surgical depletion has not been reached.

Bournemouth. W. JOHNSON SMYTH, M.D.

WHOOPING-COUGH AND LYMPHAEMIA.

MANY observers have established the fact that in whooping-cough during the convulsive stage a considerable lymphocytosis is practically constant. Dr. Gordon Ward (*Clinical Haematology*, p. 53) states that he has "seen lymphaemia follow an attack of whooping-cough, but there is little evidence to suggest that this was more than a coincidence." It seems to me the following cases suggest that it may have been more than a coincidence.

CASE I.

A healthy boy, 3½ years old, had whooping-cough for about a week. Examination of films showed 75 per cent. of lymphocytes, 5 of mononuclears, 1.5 of eosinophils, and 18.5 of polymorphs. General survey of a film revealed considerable increase of white cells. (No total count was made, but a few days later this was 26,600.)

The lymphoid cells were abnormal in four respects: (1) There was a considerable proportion of small forms which were naked nuclei, and some of these were even deformed and dwarf. (2) Cells otherwise like small lymphocytes showed hour-glass, deeply incised, and elongated, bent and twisted nuclei (Rieder forms). (3) A few showed distinctly divided nucleus—twin nuclei. (4) Of the total whites, 2 per cent. were in plasma cell form.

CASE II.

A fairly healthy girl, aged 2½ months, had moderate whooping-cough for a month. The film had 65 per cent. of lymphocytes, 12 of mononuclears, 1 of eosinophils, and 22 of polymorphs. In the films were seen several lymphocytes and mononuclears and a few large lymphoid cells, each with two nuclei. A general survey revealed a few polychromatic reds but did not suggest great increase of whites.

A week later films were taken, and in counting 200 whites there were seen four mononuclears with twin nuclei. In the same film was seen one in which the nucleus had divided into two equal parts, and then one of these apparently had also divided into two. A large lymphoid cell with a fair envelope of hyaline cytoplasm showed two distinct well stained oval nuclei. The differential count gave 45 per cent. of lymphocytes, 27.5 of mononuclears, 1 of eosinophils, 26 of polymorphs, and 0.5 of myelocytes.

These are not the only cases in which I have seen similar forms.

The points of difference from an established lymphaemia are obvious, but in an early stage of lymphaemia we know little about the blood. We do know, however, that in acute lymphaemia the white count need not exceed 20,000. Pappenheim has said (*Clinical Examination of the Blood*, 1914, p. 36): "There is this further point of difference, never observed in the leucocytoses, that various atypical forms of cell are met with. Further, mitoses are frequently observed in the leukaemias, but never in the leucocytoses. Above all, in addition to amitotic cell division occurring in lymphatic leukaemias, the Rieder type of lymphocyte may be seen." And Dr. Gordon Ward (op. cit., p. 63) writes: "If a cell other than a nucleated red is found in any film to be undergoing mitosis there can be no doubt that a case of leukaemia is being dealt with."

My cases prove that neither mitoses nor atypical cells (naked, dwarf, deformed, plasma cell, Rieder forms), and not even a liberal combination of both, are incompatible with simple lymphocytosis. But my point is that, with 80 per cent. of lymphoid cells and plenty of atypical and mitosing cells, whooping-cough lymphocytosis comes near what is defined as lymphaemic blood; that in such cases the white cell count may exceed 200,000 (Gulland and Goodall, *The Blood*, 1914, p. 280), a count probably unknown except in leukaemia; and, finally, that a haematologist "has seen lymphaemia follow an attack of whooping-cough."

Perhaps I ought to add that Pappenheim (op. cit., p. 26) believes that "since they (plasma cells) make their appearance in the course of a leukaemic leucocytosis, it would seem to suggest an inflammatory cause for the leukaemias in question."

West Ealing. ROBERT CRAIK, M.D.Glasg.

A SUGGESTION FOR A NEW SHAPE OF RUBBER DRAIN.

In the drainage of long sinuses the commonly used rubber tubing is not very satisfactory. It acts more like a foreign body in keeping the wound open, and, in most cases, its withdrawal is necessary before the contents of the wound can escape. The lumen of the tube quickly gets blocked with pus or clot, despite the numerous holes that are usually cut before its introduction, and its circular shape allows the tissues to embrace its exterior so tightly that pus can ooze past but with difficulty; also, it is troublesome to introduce owing to the tip of its pen-shaped end hitching in the sides of the wound, and, in the case of long or tortuous sinuses, the help of some instrument is required. The thin rubber cigarette drain is much better, but is also difficult to introduce into deep wounds.

In case the suggestion has not been made before (as it probably has been), I suggest that a more efficient drain for general use would be found in a rubber rod of cruciform or polyradiate section. The cruciform type would have four gutters for drainage purposes, each of which would act like an open drain instead of the closed sewer of the tube. This shape could not be blocked by œdematous tissues, as there would usually be free exit in the angles. Thus less interference would be necessary, for the drain could be left longer *in situ*, and when reintroduction became necessary the central pointing would allow it to be much more easily done than with the pointed periphery of the tube.

In use this shape has proved what I have stated, and in such cases as infected amputations it was surprising how the gutters of the drain became wet with purulent fluid as soon as it was introduced. I would suggest three sizes and three separate shapes of drain; any rubber manufacturer could easily make them at the same prices (or nearly so) as tubing:

1. Small size, triradiate in section, thickness of flanges 1 mm., length of each ray to centre 2.5 mm.
2. Medium size, cruciform in section, thickness of flanges 1 mm., length of each ray to centre 3.5 mm.
3. Large size, penteradiate in section, thickness of flanges 1.5 mm., length of each ray to centre 5 mm. to 6 mm.

A. W. M. SUTHERLAND, M.B., Ch.B., R.A.M.C.
New Military Hospital,
Rugeley Camp, Cannock Chase, Staffs.

Reports of Societies.

PAINFUL NERVE STUMPS.

At an occasional lecture delivered before the Section of Electrotherapeutics of the Royal Society of Medicine, Mr. EDRED M. CORNER showed a number of skiagraphs and drawings illustrating various causes of pain and irritation in amputation stumps, such as osteomyelitis, new bone formations, sequestrum formation, nerve inflammation, nerve strangulation, etc. Afterwards he delivered a lecture on the subject of painful nerve stumps. In the healing of a nerve end there were three stages: the stage of repair and inflammation, the stage of compression, and the stage of regeneration of nerves. The amount and duration of these might be minimized, but they could not be abolished. Compression was the keynote of the causation of pain before the war. At the present time the keynote was inflammation, and that inflammation ascended the nerve trunk—an ascending neuritis. Hence the local end must be excised and a length of nerve with it, so as to divide the nerve above the ascending inflammation within it.

Clinically five types could be recognized: (1) The type of pain immediately following operation and due to the trauma inflicted on that occasion. (2) The type due to compression of nerve fibres, particularly if inflamed. (3) The inflammatory type. (4) The type due to regeneration. The nerve fibres of regeneration were subject to both compression and inflammation, manifold owing to the branching of the regenerating fibres. (5) The type of persistent pain when all the nerve trunks had been removed, and due to the irritation of nerves not running in trunks excited by the presence of unabsorbable ligatures, or stitches, osteomyelitis, or new bone formation. The extensive repair in an amputation wound led to the formation of much irritative wound callus which sent up each connective tissue plane a tongue of irritation, like smoke from a fire.

The lecturer showed a specimen removed from Hunter's canal in which the femoral artery, femoral vein, the internal saphenous nerve, and the ligatures were ensnared in one process of the scar tissue. To this bundle was attached a part of the adductor magnus muscle which pulled on the nerve at every forward movement of the stump. A cut nerve regenerated, and none could stay that process. Like the flow of a river, it could be directed and controlled, but not stopped. If a river met an obstruction it formed a lake until it flowed over, under, or round that obstruction. Similarly with regeneration: when it met an obstruction it pooled up, forming a mass, a regeneration neuroma, a frequent cause of recurrent pain in a stump. In conclusion Mr. Corner demonstrated the structure of end bulbs, the formation of nerve pencils, the methods of nerve amputation and their results.

Professor MARINESCO showed a beautiful and most instructive series of microscope slides demonstrating:

1. Inflammation in neuroma, showing plasma cells and cells with glycogen.
2. Different types of new nerve formation.
3. Neuroma of amputation. In centre can be seen fibres, probably silk; around are numerous giant cells eating up the fragments of fibre, and a leucocytic infiltration.
4. Fibre in giant cells in median nerve.
5. Nerve plexus, new formation.
6. Fusion of neuroma of median nerve with the tendon of flexor sublimis digitorum. The tendon has been invaded by nerve fibres.
7. Nerve plexus in neuroma.
8. Endoneuritis of a little nerve bundle. The nerve fibres present marked reaction of regeneration.
9. Osteomyelitis at centre of the preparation, above and to the left there are three myelophages, on the right several osteoblasts.
10. Plexiform or plexus formation in neuroma.
11. Recent inflammation in neuroma.
12. Neurotization of coagulum. One sees bundles of new formation and fibres terminating in bulbs.

PHYSIOLOGY OF CHLOROFORM ANAESTHESIA.

At a meeting of the Section of Anaesthetics of the Royal Society of Medicine Dr. GEORGE A. BUCKMASTER discussed some considerations on the physiology of anaesthesia by chloroform. He said that the experiments carried out a few years ago by J. A. Gardner and himself for the purpose of ascertaining the anaesthetic and lethal quantities of chloroform in the blood of anaesthetized animals, the part played by the red corpuscles in the transport of the drug, and the rates of assumption and elimination of chloroform depended upon the determination of the chlorine in chloroform by the admittedly accurate method of Carius. They found that as much as 94 per cent. of the drug might be carried by the red corpuscles. The vapour and pressure of chloroform in air at the anaesthetizing value lay somewhere about 8 to 10 mm. of mercury. At this pressure they inferred that chloroform was held with some degree of firmness by the corpuscles, but whether this was due to its linkage with haemochrome (haemoglobin in its state within the corpuscles) or other constituent or constituents of the red corpuscles was a matter of dispute. It was probably absorbed by the cell proteins of the corpuscle.

In experimental anaesthetization with known percentages of chloroform, when the inhalation proceeded steadily, they recognized in animals (cats and dogs) a primary and secondary danger point. From their tables the investigators concluded that the body weight was without influence on the percentage by chloroform in the blood necessary to produce anaesthesia. The percentage value of chloroform in the blood was important in anaesthesia, for under conditions in the same animals of (1) normal quantity of blood, (2) diminution of this by haemorrhage, (3) augmentation by transfusion, the percentage remained constant at about 50 mmgr. during complete anaesthesia, though the total quantity rose and fell with the corpuscular richness of the blood.

Curves were shown illustrating the rate of assumption of chloroform by the blood during anaesthesia, and the rate of elimination from the blood after anaesthesia. In their opinion chloroform underwent no change within the body. It was neither decomposed nor oxidized. These

views were in complete disagreement with those held by others, either on theoretical or on experimental grounds.

Ventilation of the lung during chloroform narcosis could be ascertained only by plethysmographic methods with an apparatus similar in principle to that used on man by Haldane and Boycott. Under steady inhalation of chloroform, ventilation of the lung took place at a lower level. During the first three minutes the lung ventilation was diminished by about 50 to 60 per cent. of its original value. From this diminution some recovery generally occurred, but a prolonged anaesthesia always diminished the lung ventilation by a similar amount, 60 per cent. of the original value.

Reviews.

MECHANICS OF THE INTERNAL EAR.

IT is not without a pang that one who has been brought up in a belief in Helmholtz's "resonance" theory of hearing finds his faith shaken and his fascination subsiding. The thoughtful reader of *An Enquiry into the Analytical Mechanism of the Internal Ear*,[1] by Sir THOMAS WRIGHTSON, is forced to reconsider his views and those of his teachers. He can, indeed, scarcely escape being almost or entirely persuaded to be a convert to the gospel of "displacement" as set forth by Sir Thomas Wrightson, endorsed as it is by Professor KEITH. The former, as a lover of music and student of the violin in particular, as well as a trained engineer, has analysed the mechanical and mathematical principles governing the reception and transmission of vibrations from the tympanic membrane to the hair cells of the auditory nerve. Professor Keith takes up the parable as an anatomist and physiologist. He has carried out minute observations and most careful measurements in the domain of the internal ear for Sir Thomas Wrightson, and he has enriched the book with an appendix in which he presents us with the most illuminating account of the cochlear structures which we have ever met. Ter Kuile has indeed prepared the way, but it has remained for the authors of this book to clear it up and remove much unnecessary and confusing involvement.

All who tried to grasp the mysteries of the cochlea must have felt that the disturbance started in the perilymph at the lower part of the scala vestibuli somehow or other expends itself in the direction of the lower part of the scala tympani, across the cochlear duct, through Reissner's and the basilar membrane, instead of passing up the one scala, then through the helicotrema and down the other, stirring up the accordant fibres and neglecting the non-accordant ones on its way. The charm of the idea of selective resonance generally captivated the mind and led it away from the mechanical facts. Under our authors' guidance we see the four phases of the pendular vibration translated in corresponding depressions and elevations of the basilar membrane as they are transmitted from the stapes, leading in their turn to fourfold displacements of the auditory hairs. The vibrations may form simple or compound waves such as Sir Thomas has graphically constructed in large numbers by means of a special instrument he has devised and named the "ohmograph." The wave movement produced in the basilar membrane causes a nodding of the arches of Corti, and a horizontal displacement of the auditory hairs as they project through the reticular membrane and stick into the membrana tectoria. The roots of the hairs are carried forwards by the membrana reticularis and the tips are held back by the tectoria, constituting the first of the four phases of the wave movement. This is the mechanism described as "displacement," and its occurrence is unquestionable in the light of the facts and arguments set forth by Professor Keith and Sir Thomas Wrightson; it certainly seems more probable than the mere sympathetic vibration such as we observe in the strings of a pianoforte, but for the reasons for this statement we must refer the reader to the actual work.

The appreciation of the characters of the tonal stimulus is a function of the central organs, or, as Professor Keith says (p. 160): "The final process of analysis must lie in the brain; all you expect of the cochlea is that it will supply the brain with the requisite data from which an interpretation of sound can be made. In my opinion you (Sir Thomas Wrightson) have succeeded, and have thus established a really satisfactory theory of hearing."

No physiologist or otologist can afford to leave unread this thoroughly objective study of the internal ear.

D. G.

THE HEARTS OF MAN.

THE introduction of graphic methods in the study of cardiac pathology has led to reconsideration of some of the physiological problems involved, more particularly with respect to arterial action. Whether the arteries themselves play a part in the propulsion of the blood stream, other than by elastic recoil, has been many times discussed in the course of the last half-century, but the conclusions arrived at have of necessity been somewhat conjectural, lacking the support of evidence such as can now be obtained by instrumental means. A recent investigator, Dr. R. M. WILSON, who has had the advantage of working as assistant to Sir J. Mackenzie under the Medical Research Committee, has boldly put forward, in a volume entitled *The Hearts of Man*,[2] the view that a definite peristaltic action can be recognized in arteries, and that the stimulus to such action can be traced to the true sympathetic nerve fibres, and its inhibition to nerve influence in direct connexion with the vagus. Further, he contends that drugs, such as adrenalin and pituitrin, whether derived from glandular action or introduced by injection, are capable of inducing the activity of both these sets of nerves.

The train of reasoning by which these views are supported is founded upon elaborate experimental material mainly derived from polygraphic tracings. Regarding the heart itself as a muscular sphincter interposed in the course of the circulatory tube, he would appear to suggest that the peristaltic movements which he describes are systolic and diastolic in their action, and hence, collectively, they form "hearts" in the four regions which he classifies as "blood lakes"—namely, the abdominal, pulmonary, dermal, and muscular. The manner in which this suggested arterial peristalsis is adapted to states of rest and reaction is ingeniously worked out, and will doubtless prove of interest to workers in the same field. Its bearing upon the practical aspect of cardiac therapeutics remains to be seen.

In his preface the author records the opinions of two distinguished cardiologists to whom the proof-sheets of the book were submitted for criticism. Neither of them appears to have been converted to the new views, but Dr. Wilson believes in his case and maintains it, in spite of his preliminary failure to enlist expert sympathy. His work is the outcome of painstaking observation and careful experiment, and the conclusions are not dogmatically asserted but put forward tentatively as suggestions. Hence they are deserving of examination and discussion by those who may have had equal opportunities for special study.

SLEEPING SICKNESS.

THE sixteenth report of the Royal Society Sleeping Sickness Commission[3] deals with the work conducted by Sir DAVID BRUCE and his helpers at their laboratory at Kasu in Nyasaland. More than two years were devoted to studying in great detail the question of trypanosomiasis of domestic and wild animals in the area and its relation to similar diseases in man. The general conclusions that antelopes are the reservoir of trypanosomes pathogenic to man, and that they are not infected outside the circumscribed areas which are inhabited by the "fly," is, of course, not now novel, but it should not on that account be forgotten, for much opposition has been made, both on faunistic and on sentimental grounds, to the reduction or extermination of wild ungulates in certain areas; there appears to be no

[1] *An Enquiry into the Analytical Mechanism of the Internal Ear.* By Sir Thomas Wrightson, Bt., with an appendix on the Anatomy of the parts concerned by Arthur Keith, M.D., F.R.S. London: Macmillan and Co., Ltd., St. Martin's Street. 1918. (Pp. 254; 9 plates. 12s. 6d.)

[2] *The Hearts of Man.* By R. M. Wilson, M.B. London: H. Frowde, and Hodder and Stoughton. 1918. (Cr. 8vo, pp. xx + 182 6s. net.)

[3] Reports of the Sleeping Sickness Commission of the Royal Society, No. XVI. Printed for H.M. Stationery Office by Keliher and Co., Ltd. 1915. (Pp. viii + 221; 3 maps, 7 plates, and 10 coloured plates. 8s.)

doubt that this is at present the only feasible way of reducing the incidence of human trypanosomiasis.

The sleeping sickness of Nyasaland was originally described by Stephens and Fantham, who named the parasite *Trypanosoma rhodesiense*. The opinion of the commission is that *T. rhodesiense* is identical with the widely spread *T. brucei* of antelopes, etc. This conclusion rests on the absence of distinctions in morphology, or in infectivity to experimental animals, and on the fact that both are carried by *Glossina morsitans*. The argument against their assumed identity is that *T. brucei* and *G. morsitans* occur together over great tracts of Africa without apparently infecting human beings. It is suggested that this may be due to lack of careful observation, clinical and *post mortem*.

The report contains a vast mass of experimental evidence in tabular form with graphs, also good plates of trypanosomes and other blood parasites of man and animals in Nyasaland; there are references to the "micronucleus" of trypanosomes, but the small nucleus of these organisms is said to be motor in function; the "micronucleus" in the strict sense of the word is concerned with reproduction.

NOTES ON BOOKS.

THE third edition of *Diseases of Children*,[4] by G. M. TUTTLE and P. G. HURFORD, remains as satisfactory a presentation of the elements of the subject as is possible in so small a book dealing with so vast a subject. The space at the disposal of the authors is too small to permit of the subject being treated in such a way as to allow their views and tendencies to show themselves; it must remain a bare outline of generally accepted fact. The number of such books is already large, and the similarity between them close. In this volume we would have welcomed a fuller consideration of the subject of prevention, a clearer statement of physiological principles in the management of children, and greater insistence upon the dangers of the common and apparently trivial respiratory infections in childhood. Although a group of thirteen school children suffering from adenoids is shown, the etiology of the condition is dismissed in six lines of perfunctory statements. Again, under the heading "Carious Teeth" (subheading "Treatment"), we are told "The one preventive is proper care of the teeth," and there the whole question is left with all its vast importance for health. The rarer disorders, less amenable to prevention or cure, receive the more detailed attention. There are many excellent photographs.

What should be the dose in the treatment of disease with preparations of the thyroid gland? As a rule several grains of the dried gland substance are given at least once a day. Dr. L. LÉVI contrariwise holds that much smaller doses should be exhibited in many cases, and has used quantities such as one milligram a day with success. He has written a book[5] in which he sets out elaborate rules for fixing the dose in the case of any patient likely to get benefit from thyroid medication. The indications are protean. The patient may suffer from either hypothyroidism, or hyperthyroidism, or finally thyroid instability with its tendency to explosive syndromes which he calls thyrolepsies, taken as evidence of a fundamental hypothyroidism. Judging by the list of symptoms set out in tabular form we must all belong to one or other of these three categories, and therefore be in need of thyroid treatment. However, be this as it may, Dr. Lévi gives the fullest directions for the use of thyroid extracts in all sorts of morbid conditions; in general, minute doses are given at the beginning of the treatment, and the daily dose is augmented week by week up to a grain and a half.

Dr. H. WILLOUGHBY GARDNER[6] has compiled a very useful list of the various pieces of apparatus that should be got ready by sisters or nurses for the performance of most of the minor bedside operations that may be required in the examination or treatment of medical cases. The various pieces of apparatus or appliances that may be required by the physician or house officer are set out in catalogue under such headings as "Exploring chest," "Tapping abdomen for ascites," "Examination of nose," "Venesection," and so forth; and these lists appear to be complete. Perhaps the author might be asked to include the items necessary for giving a "general anaesthetic" in a hospital ward, and might also mention venipuncture (whether for bleeding or transfusion) in the next edition of this serviceable little work.

[4] *Diseases of Children.* A Manual for Students and Practitioners. By George M. Tuttle, M.D., Clinical Professor of Pediatrics, Washington University Medical School, etc., and Phelps G. Hurford, M.D., Pediatrician, St. Louis Lutheran Hospital, etc. Third edition. Philadelphia and New York: Lea and Febiger. 1917. (Post 8vo, pp. 599; 47 figures, 3 plates. 3.50 dols.)

[5] *Les Doses en Thérapeutique Thyroidienne.* M. Leopold Lévi, Ancien Interne Lauréat des Hôpitaux, etc. Paris: A. Maloine et Fils. 1918. (Cr. 8vo, pp. 87. Fr. 2.)

[6] *Instruments and Apparatus Required for the Investigation and Treatment of Medical Cases.* For the Use of the Nurses of the Royal Salop Infirmary. By H. Willoughby Gardner. Second edition. Shrewsbury: Wilding and Son, Ltd. 1918. (Fcap. 8vo, pp. 30. 1s. net.)

MEDICAL AND SURGICAL APPLIANCES.

Electric Quilts.

DR. FRED. E. WYNNE, M.O.H., etc., Wigan, writes: The problem of the electrical heating of beds has so long awaited solution that I think the results attained in the hospitals under my charge may prove of interest to the large number of medical men who are now responsible for the care of wounded and sick in hospitals and similar institutions. The Dux electric quilt is a very simple appliance, consisting of an extremely flexible resistance wire introduced between two layers of fabric so as to form a light and comfortable bed covering which is speedily warmed to the required temperature by a moderate consumption of electricity. Of the two layers of fabric the inner one is made of a heat-conducting substance, so that the heat generated in the quilt is readily transmitted to the patient, while the outer layer is non-conducting, so as to conserve the maximum of heat. The resistance wires are insulated, so as to prevent any possibility of either shock or burning. With a supply of electricity at 115 volts or less the quilt can be connected directly to a plug or electric light socket. With supplies of higher voltage it is necessary to introduce a small bracket transformer or resistance.

I used these quilts at first simply as a means of supplying warmth to consumptive cases sleeping out of doors or in shelters. The constant and evenly distributed temperature was a great boon to these patients and undoubtedly promoted sleep, while the saving of labour and fuel by the elimination of the old hot-water bottle is a tremendous advantage from the administrative point of view. Since then I have used these quilts in my fever wards, and find that by the superposition of one or more blankets, according to the room temperature, a bed temperature of 90° can be attained in less than half an hour and maintained without appreciable fluctuation for an indefinite period. This temperature is sufficient to produce and maintain sweating as long as desired, and has proved most valuable in the treatment of hyperpyrexia, post-scarlatinal nephritis, etc. I have no doubt it will be found to be equally valuable in cases of post-operative shock, severe haemorrhage, and all conditions in which the provision of external heat without disturbance of the patient is indicated. The price of these quilts is moderate and the amount of current used very small. They can, of course, be used in any house which has an electric supply. The Dux electric quilt has been supplied to me by the patentees, Messrs. Hall and Co., Dobbs Fold Works, Wigan.

A Dental Emergency Outfit.

Mr. Augustus Winterbottom, F.R.C.S., L.D.S., consulting dental surgeon to St. George's Hospital, has designed a dental first-aid outfit which is intended to tide over the difficulties that may arise at the present time, when the shortage of dental surgeons makes it almost impossible for outlying patients to obtain professional aid in emergencies. The instruments and dressings needed for temporary dental treatment of a simple kind are arranged in a tin box, roughly 5 by 4½ by 3 in. in size, and they should prove useful not only to travellers, sailors, and isolated communities, but also to general practitioners in remote districts. The directions, though brief, ought to enable any intelligent person to use the contents without danger. The sedative solution named "Slaypain" is for the relief of ordinary toothache due to an exposed pulp, and is prepared from a combination of menthol, carbolic acid, mastiche, etc. The disinfectant tablets for making solutions are a mixture of permanganates, with a carbolic acid coefficient of 43. The fluid temporary filling is a combination of a special dentine with carbolic acid and alcohol, which sets hard. There is also a supply of solid silvered gutta-percha stopping, and of dental plasters for the relief of pain when a dental abscess is forming. The whole outfit is certainly very neat and compact, and in careful hands should be the means of relieving much suffering. It will be manufactured by the Dental Manufacturing Co., Ltd., under the registered trade mark "Augwin."

British Medical Journal.

SATURDAY, SEPTEMBER 28TH, 1918.

GREAT EXPECTATIONS.

SIR BERTRAND DAWSON'S Cavendish Lectures on the "Future of the Medical Profession," which were printed in full in the JOURNAL on July 13th and 20th, came at an opportune moment. They were addressed primarily to doctors and aroused great interest in the profession, but they at once attracted notice beyond medical circles. The lecturer's personality, and the position he holds as a teacher in a great medical school and as a physician experienced in military as well as civil medicine, have secured for his views a sympathetic hearing both within and without the profession. His bold and comprehensive statement of the problem to which he applies himself with so much energy and goodwill has quickened interest, and we are glad to be able to announce that the lectures have been republished in a pamphlet under the larger title of *The Nation's Welfare*.[1] For it the author has written an introduction wherein he further develops his ideas, while in an appendix there is an architectural sketch plan giving visible shape to a model health centre such as is described in the text.

The introduction is a plea for constructive thought on national health, for an enlightened and informed public opinion, and for professional unity. The argument proceeds somewhat as follows: The first object of statesmanship in dealing with matters of health must be to get the best medical minds together and evolve a sound policy, for the guidance of experts is necessary both to construct and to administer a central department of health. This active participation of medicine is needed also for the efficiency and material advantage of the profession itself, while it is of prime importance to the nation that men of brains and character should be attracted to medicine. The setting up of a Ministry of Health can only be the first step on the road, but the right spirit must pervade it from the beginning. To ensure this the Ministry must from its inception be provided with a strong medical advisory council such as that advocated in the scheme of the British Medical Association—a representative body, meeting regularly, fully informed of all that is being done, with direct access to the Minister, and the right of initiation—the right, that is to say, to offer him advice on any subject which in its opinion is ripe for inquiry or action. With regard to the constitution and method of election of this council the author makes certain proposals which are worthy of study.

As for the Ministry itself, while recognizing that the ideal solution would be a wholly fresh and independent department, free to shape itself unfettered by departmental traditions, Sir Bertrand Dawson finds himself constrained regretfully to admit that administrative difficulties may compel it for a time to be yoked with the Local Government Board and the Insurance Commission. But if this union is to yield the substance of reform and not merely the shadow, he suggests that the Ministry should be divided from the first into three sections—health, housing, and local government, each with a permanent administrative head. Local reorganization also is desirable, as soon as may be, when the central department is established. The local health authorities should be chosen from the larger units of population, and the principle of medical guidance in medical affairs must be secured by elected medical councils.

Sir Bertrand Dawson hopes much from the awakened sense of responsibility and the growth of a civic conscience in the medical profession. While urging the need for unity and collective action, he does not hesitate to ask us to face the disagreeable truth that important sections of the profession are at present without an organized means of giving voice to their opinions. For this defect the remedy, he holds, is not new or competing organizations, but some modification of the policy of the British Medical Association so as "to draw the great majority of doctors into its fold." He regards the postal vote as a means to this end, and finds an argument in favour of the principle in the fact that it would enable the large numbers of our colleagues now with the various Expeditionary Forces to record their opinions and take their fair share in the shaping of new policy. These views and others—some familiar and some new, but all expressed with persuasive enthusiasm—are put forward, not with an air of finality, but in order to stimulate fresh discussion of a matter upon which the profession as a whole has by no means yet made up its mind.

We recorded last week a statement by the chairman of the London Insurance Committee to the effect that the draft bill for a Ministry of Health, whose terms (we were told) had been agreed upon between the Minister of Reconstruction and the various interests concerned, has now been so altered by the Cabinet Committee on Home Affairs as to make it unacceptable to the friendly societies and the Insurance Committees of the country. No information has been published as to the nature of these changes, but there would seem to be an idea in official circles that enough has been done to side-track the project for the present. Should there be any truth in these rumours great efforts will be needed to get a Ministry of Health bill on to the main line of parliamentary business during the coming session. There is, at any rate, a strong belief that what are vaguely called "influences" are bent on obstructing any such reform; and although, later or sooner, something will no doubt be done to meet the public demand for an effective Ministry of Health, there is always the danger that some half measure may be passed which will satisfy no interest—except, possibly, the underworld of officialdom. This would spell failure, and all who share Sir Bertrand Dawson's ideals, however much they may differ from him on points of detail, will welcome the lead he has given.

[1] *The Nation's Welfare: The Future of the Medical Profession.* By Major-General Sir Bertrand Dawson, G.C.V.O., C.B., M.D., F.R.C.P., A.M.S. Cassell and Co., Ltd. 1918. Price 6d.

A PHYSICAL CENSUS AND ITS LESSON.

ALMOST exactly a year ago we gave a short account of the lines along which the reorganized Medical Department of the Ministry of National Service would work. It seemed to us then that the plan which we sketched in broad terms had been ably constructed and showed a proper appreciation of the medical position and of the part which medical boards should play in the examination of recruits, and we ventured the opinion that the work of medical examination under the new scheme ought to remove all legitimate causes of grievance. We are now able to give some indication

of the results of the physical examinations undertaken during the first eight months of the present year, and of the message that they convey as to the physical fitness of the British stock.

Between January 1st and August 31st, 1918, the number of medical examinations conducted by National Service Medical Boards in Great Britain amounted to 2,080,709. During this period 28,035 applications (that is, 1.34 per cent. of the examinations) were made to appeal tribunals for medical re-examination, and of these applications less than a half were held by the tribunals to rest on grounds sufficiently substantial to justify the granting of leave for re-examination. Further, of the applicants who were granted leave to be examined by the medical assessors of the Local Government Board, the grading of 50 per cent. was unchanged. In other words, in less than 4 per cent. of this enormous number of medical examinations there was reason to believe (so far as the evidence afforded by the organization of appeal tribunals goes) that the grading by the National Service Medical Board did not correctly represent the degree of physical fitness of the individual. This result may be expressed by the general statement that a National Service Medical Board, working full time and examining twenty-five men per session of two and a half hours, graded one man per week incorrectly.

In order to realize the vast amount of work that has been done in this direction by the medical profession since the beginning of this year, it should be remembered that the administrative machinery was not created until November, 1917, and that the examinations have been carried out during a period in which unprecedented strain was thrown upon the profession to meet the heavy and persistent demands of the fighting forces for medical personnel. Moreover, the work has been done in a country to which the whole idea of conscription was novel and distasteful. The working of the administrative machinery of a compulsory Military Service Act in its application to the individual had never been envisaged, and the difficulties arising from the consequent mental attitude of the population were much intensified by the raising of the general military service age to 51 in April, which greatly increased the complexity of the domestic, occupational, and medical problems, and appeared to threaten the whole fabric of the national structure. The problems of grading had never been thought out, while the details of the procedure, and to a less extent the methods of examination, were new and unfamiliar. That in such circumstances the average error should be represented by a fractional percentage constitutes a record of which our profession has every right to be proud, as well as those responsible for the creation and administration of the machinery necessary to perform this work upon an organized basis.

There is another and more important aspect of this work. Of the two million men examined not more than 36 or 37 per cent. were placed in Grade I—that is, approximately only one in every three had attained the normal standard of health and strength and was capable of enduring physical exertion suitable to his age; the remainder—more than a million and a quarter—did not reach this standard. The suggestion has been made that the low proportion of fit men among those examined during this period is due to the fact that only the leavings of the population were under review. Analysis of the records available, however, shows that this is not the case, and that as a fact the men examined constituted a fair sample of the male population between the ages of 18 and 43 and a smaller proportion of the more fit between 43 and 51. We are told further that the experience of the boards medically examining women for national work corresponds broadly to that of the National Service Medical Boards examining men. Such evidence points only too clearly to a deplorably low state of national health.

While it has not yet been possible to work out the details of this great mass of medical examinations, the preliminary results indicate that preventable disease is responsible for the bulk of these physical disabilities, and demonstrate the ravages which industrial life has made upon our real national capital—the health and vigour of the population. Too little food, too long hours of work, too little sleep, too little fresh air, too little play, too little comfort in the home, are evidently the chief factors concerned in producing this mass of physical inefficiency with all its concomitant human misery and direct loss to the country. To take effective measures on the broadest lines to remedy this condition of things is a most urgent duty. It is not necessary to wait for the end of the war. The war has revealed the defect, but it has also led to the suggestion of remedies, as may be read in the reports of the Health of Munition Workers Committee. It was mainly for this reason that it seemed well from time to time to devote a good deal of our scanty space to these reports. They were written to meet an emergency, but contained much of permanent value in relation on the one hand to hours of work and industrial fatigue, and on the other to what is commonly called welfare work, that is to say, the application of sound medical and hygienic principles to the care of the health of workers. The State in the future may do something, especially in relation to the last of the evil influences enumerated above, for it seems to be acknowledged that the capital necessary for proper housing cannot be provided by private enterprise; but the remedy for the other evils must be sought in a closer and more friendly understanding between employers and employed. Dr. Rhoda Adamson's article published last week (p. 309) shows that it is by no means hopeless to expect employers to respond to a reasoned appeal. Although real improvement can hardly be expected for one or two generations, the foundations of a better national physique can be laid at once.

THE EPIDEMIOLOGY OF PHTHISIS.

THE Medical Research Committee has just issued the first section of a report by Dr. Brownlee upon the epidemiology of phthisis.[1] Dr. Brownlee has analysed the regional statistics of disease contained in the decennial supplements of the Registrar-General, and is led to conclusions of great importance. He found in the first instance that the curves of death-rates at ages were dissimilar in different localities, a fact which suggested the desirability of attempting to analyse them into components. This analysis he has been able to perform with considerable success, it being found that the divergencies are explicable by an admixture in varying proportions of three distinct statistical types, one showing a maximum mortality in early adult life, a second reaching a maximum between the ages of 45 and 55, and a third culminating between the ages of 55 and 65. The next step was to bring into relation the predominance of the several components with measures of general unhealthiness. This part of the investigation, which was carried out

[1] An Investigation into the Epidemiology of Phthisis in Great Britain and Ireland. By John Brownlee, M.D., D.Sc. Medical Research Committee. Special Report Series, No. 18. H.M. Stationery Office. 1s. 3d.

by the method of correlation, led to the conclusion that the second or middle age component was related to the general healthiness or unhealthiness of the locality, the other two components being relatively unaffected by environment.

The later pages of the report are devoted to a study of the historical development of phthisis mortality, especially in London. The author finds no statistical evidence that the "young adult" type of phthisis is affected to any extent by environment. It seems to be as common in better class localities as in poorer ones. He concludes that the epidemiology of the two chief types of phthisis—namely, the "young adult" and "middle age" types—is different. The present epidemic of phthisis among the young had its maximum, he states, somewhere about the middle of last century, while the epidemic of phthisis among the middle aged had its maximum fully one hundred years ago. There is no doubt, he thinks, that a considerable part of the decline of phthisis in recent years is in line with the biological properties of diseases in general, and has little to do with hygienic conditions. The position, in fact, would be much the same with regard to tuberculosis as to pneumonia; it is now recognized that there are at least four strains of pneumococci, so that for any reasonable certainty of successful treatment by antipneumococcic serum a bacteriological diagnosis of the type of pneumococcus present is essential.[2]

Dr. Brownlee's results raise issues of great practical importance, both from the etiological and therapeutic sides. Etiologically, it is evident that if there exist disparate types of phthisis in different geographical areas, and if, as is the case of tin miners who are concentrated in Cornwall, certain occupations predominate in particular localities characterized by the special incidence of a particular type upon both sexes, the student of occupational phthisis must take into consideration a hitherto unsuspected factor. Dr. Brownlee holds that his investigation points "to the conclusion that the disease known as phthisis pulmonalis is not a single disease, as is commonly understood, but rather a group of diseases, coming thus into line with typhoid fever and bacillary dysentery, both of which are now known to consist of groups of diseases of which the causal organisms possess similar properties, and produce fevers which run almost the same course. If this conclusion," he continues, "is found justified, many important consequences must follow. For instance, from analogy with other diseases it would seem that, if any kind of vaccine or serum treatment is adopted, it will be necessary to see that the vaccine or serum is made with the proper organism." From the therapeutic point of view, then, since it is unreasonable to suppose that a vaccine capable of protecting against a paratyphoid infection will be of use in connexion with true typhoid, it is, correspondingly, unlikely that a tuberculin prepared in one locality will necessarily be of value in another. Dr. Brownlee says that he has never seen any demonstrable benefit from the tuberculin treatment in Glasgow, and suggests that this may be because the "middle age" type of phthisis is rare in that city while the vaccines may be prepared from this type which is prevalent in London.

To the bacteriologist there is no novelty in the suggestion of there being distinct strains of human tubercle bacilli, but the apparent demonstration of such differences by a statistician in the first instance is a tribute to the value of the statistical method. Evidently so important a conclusion will need further verification before it meets with general acceptance; but the method adopted by Dr. Brownlee in tracking down his types, which puts the reader in mind of the manœuvres of a skilled chess player, cannot fail to interest any one who appreciates the marshalling of numerical data.

[2] BRITISH MEDICAL JOURNAL, January 12th, 1918, p. 55.

THE QUATERCENTENARY OF THE ROYAL COLLEGE OF PHYSICIANS.

THE four hundredth anniversary of the foundation of the Royal College of Physicians of London is an event which cannot be allowed to pass without comment. On September 23rd, 1518, Henry VIII granted the charter by which the College was constituted. He did so, moved by the example of similar institutions in Italy and elsewhere, and by the instigation of Thomas Linacre and others of his own physicians, and of Wolsey his Chancellor, with a view to the improvement and more orderly exercise of the art of Physic, and the repression of irregular, unlearned, and incompetent practitioners of that faculty. The College consisted of eight persons known as "elects," with power to elect from amongst themselves a President annually, and to choose the "most cunning and expert men" to fill such vacancies as occurred in their number. At the same time it was enacted that no person except a graduate of Oxford or Cambridge, without dispensation, should be permitted to practise physic throughout England, unless he had previously been examined and approved by the President and three of the Elects. The first meetings of the College were held at Linacre's private house in Knightrider Street, the front portions of which, comprising a parlour below and a chamber above, used as a council room and library, were given to the College during Linacre's lifetime. These small premises—the ground on which they stood only measuring about twenty-four square feet—continued to be used for nearly a hundred years. But in 1581 they were enlarged, and a capacious theatre added, in which to deliver the lectures founded by Dr. Caldwell and Lord Lumley, in 1583. Dr. Foster was the first Lumleian lecturer. A botanical garden, under the supervision of Gerard, was also secured. Linacre, founder of the College, learned both as physician and scholar, was president until he died in 1524. Of distinguished successors and benefactors of the College during its first hundred years of existence the names of Clement (1544), professor of Greek at Oxford; of Wotton, the zoologist; of Caius (1555), linguist, critic, physician, naturalist, second founder of Gonville and Caius College, Cambridge, antiquarian, and designer of the insignia of office still used by presidents; of William Gilbert (1600), author of *De Magnete* and first physicist of the College, naturally occur to us. The last meeting in the old college in Knightrider Street was on June 25th, 1614; the first meeting in the new College, in Amen Corner, Paternoster Row, was on August 23rd, 1614. Here, in April, 1616, Harvey delivered the Lumleian lectures in which he is supposed to have expounded his doctrine of the circulation of the blood; two years later the first *Pharmacopœia Londinensis* was issued by the College. The civil wars reduced the College to the greatest distress. Unable to pay an assessment by Parliament of five pounds per week, and its rent to St. Paul's, it was in danger of being sold by auction, when Dr. Baldwin Hamey came to the rescue, purchased house and garden himself, and with the utmost generosity presented them to his colleagues two years afterwards. Prosperity followed, for in 1653–4 the munificence of Harvey enriched the College with a museum, a "noble building of Roman architecture," stocked with valuable and curious contents, and a library of medical books, treatises on geometry, geography, astronomy, music, optics, natural history, and travels. But this prosperity was not long continued. After Harvey's death in 1657, the treasury was nearly empty, lectures were suspended, large

numbers of physicians were living and practising without a licence within the liberty of the College, examinations were discontinued. The creation in 1664 by Sir Edward Alston of upwards of seventy honorary Fellows, both brought unlicensed practitioners under the authority of the College and replenished its coffers. But in 1665, during the great plague, most of the Fellows and officers of the College fled the city, and thieves broke in and stole the whole of the contents of the treasury chest. On September 5th, 1666, the great fire consumed the whole of the College buildings; only the charters, annals, insignia, some instruments and portraits, and 140 printed books out of 634,000 volumes in the library were saved. The premises in Amen Corner were never rebuilt, and the College remained homeless until its new buildings in Warwick Lane, designed by Sir Christopher Wren, were opened without ceremony on May 13th, 1674. This commodious and stately building occupied four sides of a quadrangle enclosing a large paved court, on the east side of which was erected at Sir John Cutler's expense a spacious anatomical theatre. The other sides of the quadrangle contained the library, cœnaculum, censors' room, and other public apartments. At the back of the college were the botanical garden, and in 1684 a noble library building was presented by the Marquess of Dorchester. Here the college stood for 150 years; all that remains of it now is the beautiful Spanish oak wainscoting, the gift of Hamey, which lines the Censors' Room in Pall Mall, and two colossal statues of Cutler and Charles II, which may be seen in the Guildhall Museum. At the end of 150 years the college buildings had become dilapidated, Warwick Lane was a slum, the population and fashion had moved westwards, and a more convenient situation for the Royal College of Physicians was a necessity. Mainly through the influence of Sir Henry Halford, a grant of land was obtained from the Crown at a cost of £6,000 in Pall Mall East, and on it the present College building, designed by Sir Robert Smirke, was erected and opened with great ceremony on June 25th, 1825. The premises in Warwick Lane were sold for £9,000. One may regret their disappearance, and that it is no longer possible to people them with the shades of those who have made the history of medicine and of this famous College during 150 years of its life. The names of such are Mayerne, Glisson, and Sydenham, exponents of clinical medicine, followed by Radcliffe, Garth, Arbuthnot, Freind, Sloane, and Meade, and last but not least, William Heberden. All of these have made their mark in the history of medicine, and directly or indirectly have been associated with the history of the College. The quatercentenary of the Royal College of Physicians of London reminds us that, in spite of modern progress, we cannot afford to neglect the learning of past ages.

THE ROYAL AIR FORCE MEDICAL SERVICE.

At the beginning of the year we thrice urged upon the authorities the importance of setting up without delay a properly organized and independent Air Medical Service, and pointed out the necessity of giving full weight to the scientific side of this new work. The argument in favour of a separate and complete medical service for the Royal Air Force seemed unassailable, and it was understood that the Air Council intended to translate this principle into action and put the Air Medical Service on a sound footing as a scientific organization. Then it became known that something had happened to hinder the establishment of an independent medical service, contrary to the advice of the committee which had reported. A second committee was then set up and bent its energies to contriving a plan to keep the two older services in touch with the Air Service. Thus a compromise was reached, under which it was claimed, however, that the two essential conditions—that medical officers responsible for the care of the air personnel should specialize in that particular branch of medical science and should not be changed indiscriminately—would be secured. It was hoped that the compromise scheme would at least allow the Air Service to begin at once to train its medical officers. The suggestion that the vacant seat on the Air Council should be allocated to the director-general of the air medical service was not adopted, but the principle was conceded that the Medical Administrator should have direct access to the Secretary of State for the Air Force. The rest of the story, so far as it has been made public, is to be found in our Parliamentary Notes during the first three months of the year. After the delay which occurred the work of centralizing the medical arrangements of the Air Force has gone ahead under the guidance of the Medical Administrative Committee. In another column we print this week a Memorandum setting out in detail the terms and conditions of service in the Royal Air Force Medical Service, to which many of our readers will no doubt turn with considerable interest. This document lays down the sound principles of promotion by selection, and of continuous merit pay at an increased rate for specially qualified officers who maintain their high standard of work, while the ground is prepared for future directorates "when a permanent Air Force Medical Service is established." For the time being medical officers of the regular naval or military forces, as well as of the Royal Naval Volunteer Reserve and R.A.M.C. Special Reserve and Territorial Force, will be "attached" to the R.A.F. Medical Service; temporary medical officers in the navy or army will be "transferred," their previous temporary commissions being relinquished at the time of transfer. Permanent commissions will not be granted at present. It will be seen that the terms of service are in certain definite respects an improvement upon those in force in the medical branches of the navy and army, while there is an important proviso that no person is to suffer loss of pay, gratuity, or pension by reason of transfer or attachment to the Royal Air Force.

THE EXTERMINATOR OF YELLOW FEVER FROM RIO.

RIO DE JANEIRO, the island-studded bay of which the earlier navigators thought was the mouth of the River of January, is perhaps the most beautifully situated city in the world. But for sixty years, since 1849, when yellow fever first laid its hand on this port, it had a most sinister reputation, and was shunned as worse than the plague by the shipping fraternity, who held that "to go to Rio is to commit suicide," and with good reason, for during this period there were over 59,000 deaths from yellow fever in the city proper, without taking into account the suburbs. The population of Rio is much larger than the combined totals of Habana, Santiago, Panama and Colon, and the story of the energetic health administrator who, in the face of these difficulties, freed his native city from its reputation as a hotbed of yellow fever by applying the lessons of the American Yellow Fever Commission in Cuba, was told in a pleasantly-written notice by W. C. Wells,[1] the chief statistician of the Pan-American Union, and may be briefly referred to here, as it is, perhaps, not so well known as it deserves. In 1900 there was an outbreak of plague at Rio, and, on Professor Roux's advice, Oswaldo Cruz, a young Brazilian then engaged in bacteriological and toxicological research at the Pasteur Institute, was appointed to direct an establishment for the preparation of anti-plague serum in Rio. This happy choice was destined to have results much more far-reaching than was anticipated. Cruz, convinced that the successful campaign against yellow fever in Cuba could be repeated in Rio, found a sympathetic supporter in President Rodrigues Ales, to whom this young man, just over 30 and without any special reputation as a yellow fever authority, bravely said, "Give me the proper authority and a sufficient force and means

[1] W. C. Wells, *United States Nav. Med. Bull.*, Washington, 1917, ix, 521-5.

to work with, and I will rid Rio of yellow fever in three years." The means were provided, and in 1903 Cruz started with seventy-five medical men to exterminate the mosquito *Stegomyia fasciata*, which is the carrier of yellow fever, and to prevent its access to patients; to facilitate this, compulsory notification of the disease was established. This campaign, which covered nearly the whole of Brazil, was the most extensive ever undertaken, and was completely successful. In 1903 there were 584 fatal cases in Rio, and it was finally stamped out in 1908 when Cruz resigned the post of Director-General of Public Health to become the head of the Institute of Tropical Diseases, now known as the Oswaldo Cruz Institute for Experimental Pathology and Serum Therapeutics. He did much in the short span allotted to him, and died on February 11th, 1917, at the early age of 44½ years.

GERMAN MEDICAL LITERATURE IN HOLLAND.

A CORRESPONDENT of the *Montpellier Médical* has described the methods adopted by Germany to secure the peaceful penetration of Holland by her medical literature. He found that in the libraries of various Dutch writers all the books dealing with medicine and science were German. The Dutch bookseller who supplies German books gets a big commission. German publishers send all their books "on approval" and take them back even when worn or damaged. Till recently Dutch medical students received directly from Leipzig offers of books at a cheap price and on easy terms of payment. The German bookseller makes use of the lists of students published by the Dutch universities, and often the bedell of the university, for a small consideration, supplies the names and addresses of students. The medical journals published in Germany are for a long time sent gratuitously to students and young graduates. In time these young men become subscribers, or get into the habit of looking through the publications in reading-rooms. Instruments are pushed in the same way. The Dutch medical periodicals are full of advertisements from German firms vaunting their pharmaceutical products and their instruments. By these means Germany has secured a certain hold on Holland whose students have become accustomed to go to the other side of the Rhine to study. Advertisements of the summer semester courses are sent to deans of medical faculties, and to the porters of hospitals. The summer semester in Germany begins towards the end of April and ends in July. The holidays in Holland begin about the end of May or the beginning of June, and end in the latter part of September. This gives Dutch students the opportunity of going to Germany in the interval. There they are welcomed with effusion; rooms are found for them, and they are shepherded in such a way that they generally go home with pleasant memories of their visit. It is natural, therefore, that the young Dutch doctor should return to Germany for post-graduate study, for which he is offered all facilities. The medical exploitation of Holland is only one tentacle of the octopus which is striving to get the world in its grip, but from this example in a comparatively small sphere of commercial enterprise an idea may be formed of the persevering efforts of the Germans.

MEDICAL EDUCATION IN THE UNITED STATES.

THE Educational Number of the *Journal of the American Medical Association* gives statistics as to medical education in the United States. After the civil war the number of medical schools increased rapidly until in 1900 they numbered 160, more than there were in the whole of the rest of the world. Most of the schools were dependent on the students' fees for maintenance, and the competition for candidates involved corresponding laxity in the terms of admission. In 1904 only four medical schools required college work as a condition of admission, and only from 20 to 25 per cent. required a four-year high school education. In these circumstances it is not surprising that in 1904 the number of medical students reached the amazing total of 28,142, and in that year 5,747 graduated as doctors; nor is there reason to wonder that at the present time the Surgeon-General finds it necessary to reject large numbers of applicants for commissions in the Medical Reserve Corps on account of lack of professional training. The campaign of publicity started by our contemporary in 1900 led in 1904 to the creation of the Council on Medical Education which has been active in promoting improvement. At present, largely through the fusion of medical colleges, the number has been reduced to 90, that of students to 13,630, and of graduates to 2,670. On the other hand, there has been a considerable increase in the number of colleges that enforce higher requirements for admission and in the number of students and of graduates who possess the higher entrance qualifications. Instead of four (2.5 per cent.) medical schools which in 1904 required any college work as a condition of admission, now 83 (92.2 per cent.) require two or three years of such work; instead of only 1,761 (6.2 per cent.) students enrolled in the higher standard colleges in 1904, the number during the past year was 12,999 (95.3 per cent.), while instead of only 369 (6.4 per cent.) graduates coming from these colleges in 1904, at the end of last session 2,412 (90.3 per cent.) graduated from those institutions. In addition to these improvements, greatly increased endowments have been obtained. Most of the schools have erected new buildings, established better equipped laboratories, and secured more extensive clinical facilities. Moreover, they have obtained the services of skilled full-time teachers in both the laboratory and the clinical departments. Instead of being overburdened with lectures the student now gets the greater part of his clinical training at the bedside or in small group clinics. During the last three or four years several of the largest medical schools in the United States and Canada have thrown their doors open to women students. This step was taken in 1914 by the University of Pennsylvania; in 1915 by the Tulane University of Louisiana; in 1916 by the Columbia University College of Physicians and Surgeons; in 1917 by University and Bellevue Hospital Medical Colleges, the University of Maryland, and the Medical College of Virginia; and in 1918 by Harvard and McGill University, Montreal. But the idea had been widely translated into fact long before the war. More than forty years ago the University of Michigan made its medical courses co-educational, and practically all State universities followed its example. From its foundation in 1893 the Johns Hopkins University, Baltimore, has admitted women. The Women's Medical College in New York closed its doors only after Cornell University established its medical school and admitted women in 1899. In 1902 Rush Medical School, which had become affiliated to the University of Chicago, became co-educational. At the present time, of the ninety medical colleges in the United States, sixty admit women.

SOME ASPECTS OF THE STATUS LYMPHATICUS.

IN an interesting article embodying much pathological experience at the Bellevue Hospital, New York, Symmers[1] mentions that the credit for establishing the clinical signs of status lymphaticus really belongs to Charles Norris, who, in 1909, after four years' work at Bellevue on the subject, wrote an account of the diagnostic signs to von Neusser, his former teacher in Vienna. Two years later the Viennese professor brought out a paper on the diagnosis of status lymphaticus, which, in spite of grateful acknowledgement to Norris, has received undue credit, especially as Norris had, in 1909, published his observations in America. The "angelic child," described by the elder Gross as possessing the lymphatic constitution and prone to what is now called surgical tuberculosis, is the subject

[1] D. Symmers, *Amer. Journ. Med. Sci.*, Philadelphia, 1918, clvi, 10.

of status lymphaticus, as are also some coarse-featured children. After puberty its recognition becomes easier, the delicate velvety skin, the arching and rotund thighs, slender waist, in males a small penis with an acorn-shaped glans, and pubic hair as in the female, and scanty hair on the trunk, mark the existence of this condition, which, generally speaking, is most familiar as the finding of a coroner's inquest. Symmers considers that the dangers of the condition are (1) that the instability of the lymphatic tissues provides a mechanism capable of so sensitizing the body as to produce anaphylactic phenomena varying from simple urticaria to convulsions and sudden death, and also lowers the resistance to infections, especially of the throat and alimentary canal, and (2) that the congenital muscular hypoplasia of the blood vessels renders them unable to withstand ordinary changes in blood pressure. Among 5,652 necropsies at the Bellevue Hospital, 457, or 8 per cent., showed this condition, which was six times commoner in males than in females. In addition to the status lymphaticus in youth, when the lymphoid tissues are active, a recessive form later in life is described. Contrary to von Neusser's statement, the spleen is not enlarged in uncomplicated status lymphaticus, though its lymphoid follicles were hyperplastic in 88 per cent. Necrosis of the germinal areas in the lymphatic glands is common, and in the recessive form is shown by areas of spindle cells. The anaphylactic reactivity of the body depends on the number of these necrotic areas, and sudden death is connected with the discharge of nucleo-proteins from them; sudden death is probably not due to rapid toxaemia caused by the abrupt and simultaneous destruction of numerous follicles, but to anaphylactic shock subsequent to further destruction of the germinal areas—for example, after injection of a vaccine or serum, in an individual already sensitized by a previous discharge of nucleo-proteins from necrosed germinal areas. As epilepsy may be an anaphylactic manifestation in the subjects of the status lymphaticus, it is suggested that the thymus and the spleen should receive *x*-ray exposures. Cerebral haemorrhage and miliary aneurysms in the brain in young persons are explained by the status lymphaticus; the aorta was found to be hypoplastic in 40 per cent. of 249 cases of status lymphaticus. The condition contra-indicates work in a compressed atmosphere, and is commonly seen in those unstable emotionally, in alcoholics, suicides, and criminals. As a result of their hereditary anatomical imperfections the subjects of status lymphaticus are believed to be more susceptible than ordinary persons to the infective, psychical, and other factors that precipitate Graves's disease. Acute infections, such as acute endocarditis and cerebro-spinal fever, are favoured by the status lymphaticus, and the latter of these diseases then runs a remarkably rapid course. Symmers thus accepts the usual view as to the congenital origin of the status lymphaticus, and does not mention or criticize Dr. H. C. Cameron's[1] contention that it is an acquired condition due to chronic irritation of the mucous membranes by a persistent, though perhaps quiescent, catarrhal infection.

THE MURDER OF HAMLET'S FATHER.

In a paper with historical, etymological, and pharmacological aspects, Dr. D. I. Macht,[2] of the Johns Hopkins University, brings out several points of interest in connexion with the murder of Hamlet's father by the instillation into his external ears of the "juice of cursed hebenon," or hebona, as it is spelt in some editions. According to the original Hamlet story, the murder was committed with a steel weapon. The pouring of poison into the ears appears for the first time in Shakespeare's account, and was almost certainly adopted by him from the methods of Italian poisoners, as, indeed, is suggested by Hamlet's aside on the re-enactment of the murder by the players under his direction: "His name's Gonzago; the story is extant and writ in choice Italian." The nature of hebenon or hebona has long exercised Shakespearian scholars, and Dr. Macht analyses the claims of the yew, ebony, henbane or hyoscyamus, hemlock, and belladonna. While there is plenty of evidence that the yew (*Taxus baccata*) is poisonous, there is none to show that the ebony tree is; but the English word "heben," yew tree, is derived from the Hebrew root, "eben," meaning a stone, and really refers to the hardness and not to the colour of the wood, so that in the Middle Ages it was employed for any hard wood. There is also sound evidence in favour of the contention that hebenon is the correct reading and a synonym for henbane. Metathesis of consonants is not an unusual phonetic phenomenon. The toxic properties of henbane were well known at that time, and Holland's translation (1660) of Pliny, in which madness is mentioned as a result of instilling oil of hyoscyamus seeds into the ears, may have been known to Shakespeare. But, after all, it is probably impossible to be certain whether yew or henbane was meant by Shakespeare, and his poetic description of the symptoms does not help much in this respect. Macht has investigated experimentally the absorption of drugs and poisons through the external auditory canal and membrana tympani into the general circulation, and the production of constitutional symptoms. His results, which show that a number of drugs, such as aconite and nicotine, can be thus absorbed, will be published in full in the *Journal of Pharmacology and Experimental Therapeutics*, and provide a scientific justification for the aural administration of drugs, which has long been practised, and an explanation of their homicidal abuse in the past.

[1] H. C. Cameron, BRITISH MEDICAL JOURNAL, 1917, i, 752.
[2] D. I. Macht, *Johns Hopkins Hosp. Bull.*, Baltimore, 1918, xxix, 165-170.

WE hope that as many members of the medical profession as can find time to do so will attend the meeting which is to be held at Steinway Hall, Wigmore Street, London, W.1, on Tuesday next (October 1st), at 5.30, for the purpose of securing the election of representative medical men to the House of Commons.

NEWS has been received of the death, in his 83rd year, of Sir Philip Sydney Jones, M.D., F.R.C.S., consulting physician to the Royal Prince Alfred and Sydney Hospitals, and a former vice-chancellor of the University of Sidney.

DURING the coming months a course of lectures on public health problems under war and after-war conditions will be delivered on Wednesdays at the Royal Institute of Public Health. The dates and subjects are as follows: October 9th, Anthropometry and national health, by Professor Arthur Keith, M.D., F.R.C.S.; chairman, Major Leonard Darwin. October 16th, Racial reconstruction and the proposed Ministry of Health, by Dr. C. W. Saleeby; chairman, Major the Hon. Waldorf Astor, M.P. October 23rd, The obviation of ship-borne infections, by Dr. W. M. Willoughby; chairman, Professor William R. Smith, M.D., Sheriff of the City of London. October 30th, The prevention and abortive treatment of venereal disease, by Lieut.-Colonel L. W. Harrison, M.B., D.S.O.; chairman, Sir George H. Makins, G.C.M.G., P.R.C.S. November 6th, Infection and disinfection in war time, by Professor J. M. Beattie, M.D.; chairman, Colonel J. G. Adami, M.D., F.R.S., C.A.M.C. November 13th, The tuberculous soldier, by Dr. Jane Walker; chairman, Lady Gough. November 20th, The care of pensioners and disabled combatants in relation to national health and wealth, by Sir John Collie, M.D.; chairman, the Right Hon. John Hodge, M.P. November 27th, National kitchens and the national health, by Alderman C. Spencer; chairman, the Dowager Viscountess Rhondda. December 4th, The rôle of the ports in the protection of the health of the nation, by Professor E. W. Hope, M.D.; chairman, the Lord Mayor of London. December 11th, The organization and administration of child welfare centres, by Dr. Eric Pritchard; chairman, Sir John Kirk. December 18th, The proposed Ministry of Health, by Professor William R. Smith, M.D.; chairman, the Right Hon. W. Hayes Fisher, M.P.

THE WAR.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Died on Service.

STAFF SURGEON C. DEVEREUX MARSHALL, R.N.V.R.

News has been received of the death from cholera at Bombay, on September 14th, of Staff Surgeon Charles Devereux Marshall, F.R.C.S., R.N.V.R., Senior Medical Officer, Persian Gulf and Mesopotamia. An obituary notice appears on p. 361 of this issue.

ARMY.

Killed in Action.

CAPTAIN J. STEEL, M.C., R.A.M.C.

Captain J. Steel, M.C., R.A.M.C., killed in action on September 2nd, aged 25, was the only son of Mr. and Mrs. D. F. Steel of Dennistoun, Glasgow. He was educated at Whitehill School, and passed to the University of Glasgow, where he closed a distinguished career by graduating M.B., Ch.B. in 1916. During his final year he acted as resident assistant at Glasgow Eastern District Hospital. On leaving the university he took a commission in the Special Reserve of the R.A.M.C., and was sent to France, where he was promoted captain after a year's service. In March of the present year he was awarded the Military Cross while serving with the Royal Sussex Regiment. A few days before his death he was attached to the Somerset Light Infantry, and it was while advancing with his regiment to the fighting line that he was killed by an enemy shell.

Died on Service.

LIEUTENANT T. M. BOYD, R.A.M.C.

Lieutenant Thomas Moffatt Boyd, R.A.M.C., was reported as having died on service, in the casualty list published on September 17th. He was educated at Belfast University, where he graduated M.B., B.Ch., and B.A.O. in 1917, after which he took a temporary commission as lieutenant in the R.A.M.C.

Died of Wounds.

CAPTAIN G. R. COWIE, S.A.M.C.

Captain Graham Robertson Cowie, South African Medical Corps (of whom a brief notice was published in the BRITISH MEDICAL JOURNAL of September 21st), died in a casualty clearing station on September 3rd of wounds received the previous day, aged 27. He was the elder son of John Cowie, late of Johannesburg, and was educated at Loretto School and at University College, Oxford, where he graduated B.A. in natural science in 1913. He had been a member of King Edward's Horse, and rejoined that corps on August 8th, 1914. On December 24th, 1914, he was gazetted second lieutenant in the Royal Field Artillery, went to France in May, 1915, and served in the battle of Loos, when he was mentioned in dispatches. In June, 1916, he returned to England to complete his medical course at Middlesex Hospital, and in 1917 graduated M.B. and B.Ch.Oxon., also taking the diplomas of M.R.C.S. and L.R.C.P.Lond. He was then gazetted to the South African Medical Corps, and last November returned to France, where he served first with a South African general hospital, and then as medical officer to a brigade of South African Royal Garrison Artillery.

CAPTAIN J. C. FORSYTH, C.A.M.C.

Captain J. C. Forsyth, Canadian Army Medical Corps, was reported as having died of wounds, in the casualty list published on September 19th.

Wounded.

Lieut.-Colonel D. Ahern, D.S.O., R.A.M.C.
Lieut.-Colonel E. R. Selby, Canadian A.M.C.
Major H. S. Hollis, R.A.M.C.(T.F.).
Major W. C. Sawers, Australian A.M.C.
Captain A. C. B. Biggs, M.C., R.A.M.C. (temporary).
Captain C. Cairne, R.A.M.C. (temporary).
Captain G. W. Christie, R.A.M.C. (temporary).
Captain A. S. Cockburn, Australian A.M.C.
Captain G. F. Denyes, Canadian A.M.C.
Captain A. H. Donaldson, R.A.M.C. (temporary).
Captain G. R. Hamilton, Australian A.M.C.
Captain J. P. McGreehin, R.A.M.C. (temporary).
Captain R. P. Murphy, Australian A.M.C.
Captain H. B. Sherlock, M.C., R.A.M.C.(S.R.).
Captain E. P. H. Vickery, R.A.M.C. (temporary).
Captain R. Ward, M.C., R.A.M.C. (temporary).
Lieutenant W. F. Kirlichan, R.A.M.C. (temporary).
Lieutenant D. B. Leitch, R.A.M.C. (temporary).

Prisoners of War.

Major N. A. A. Hughes, R.A.M.C. (temporary).
Lieutenant C. Murray, R.A.M.C. (temporary).

DEATHS OF SONS OF MEDICAL MEN.

Andrews, Edward Norman, Second Lieutenant East Kent Regiment (The Buffs, Third Foot), youngest son of Dr. Collingwood Andrews of Hampstead, died on August 23rd, of wounds received the previous day, aged 19. He was educated at Oundle School, where he was a school prefect, and captain of boating. Entering Sandhurst in October, 1916, he got his commission in December, 1917, and went to the front last July.

Davies, Edward Stanley, Captain, and Davies, Ernest Owen, Second Lieutenant, both of the North Staffordshire Regiment, sons of the late Dr. Gomer Davies, were both killed in action on September 9th. The former received his commission on January 28th, 1915.

Elliott, G. Keith, Lieutenant Royal Welsh Fusiliers, elder son of Dr. George Elliott of Baschurch, Shrewsbury, killed September 8th, aged 20. He was educated at Shrewsbury, where he gained many prizes and two exhibitions, and in 1916 won an open science scholarship at University College, Oxford. He did not go into residence, but joined the University O.T.C., and thence the cadet unit, getting his commission in March, 1917. He served in Egypt and Palestine till last May, when he went to another front.

Lambert, C. J. N., M.C., Second Lieutenant Royal Field Artillery, elder son of Dr. Hugh Lambert of Barnes, killed September 2nd, aged 21.

Pole, Arthur Douglas, Alberta Regiment, youngest son of the late Dr. Alexander Pole of Midbrake, Shetland, killed September 2nd.

Summerhayes, J. A., Captain Labour Corps, attached Royal Inniskilling Fusiliers, eldest son of Lieut.-Colonel J. O. Summerhayes, D.S.O., R.A.M.C.(T.F.), killed August 27th, aged 19. He was educated at St. Laurence College, Ramsgate, and had recently entered University College, Oxford, as a medical student. He went to the front last February.

Sutton, Vivian Charles W., Second Lieutenant Royal West Kent Regiment, attached 2/20th London Regiment, eldest son of Dr. C. R. Arnold Sutton of Sidcup, Kent, killed September 14th, aged 22. He was educated at Rugby, and afterwards was articled to Sir Wm. Peat and Co., chartered accountants. He joined the H.A.C. in September, 1914, was transferred to 13th London Regiment, 1916, with whom he saw service in France, Salonica, Egypt, and Palestine, being present at the capture of Jerusalem. He was subsequently gazetted to the Royal West Kent Regiment, and had returned to France, where he was killed.

Wilson, James, New Zealand Field Artillery, second son of the late Dr. Wilson of Wanlockhead, killed August 24th.

Captain Richet, one of the most famous of French aviators, has been missing since August 27th. He is a son of Dr. Charles Richet, the distinguished professor of physiology in the University of Paris, who has taken a prominent part in the development of aviation in France.

Geoffrey Sebastian Buck, whose name appeared in this column last week among the sons of medical men, was the eldest son of Professor Percy Buck, Mus.Doc.Oxon., music master at Harrow School, and grandson of the late Thomas Bond, F.R.C.S., Surgeon to Westminster Hospital.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

HONOURS.

THE following is a continuation of the list given in our last issue of awards to medical officers in recognition of their "conspicuous gallantry and devotion to duty" in the field:

Military Cross.

Temporary Captain (acting Major) Francis de Sales McMenamin, R.A.M.C.

He worked day and night, getting into touch with regimental aid posts and evacuating their wounded under heavy shell and machine-gun fire. By his untiring devotion to duty he saved many lives.

Temporary Captain David Gair McRae, R.A.M.C.

While in charge of an aid post during an enemy attack, hearing that a siege battery was being heavily shelled, and had many casualties, he at once proceeded, with a non-commissioned officer, to attend to the wounded in the battery position, and stayed there, under shell fire, for an hour. Throughout he showed fine disregard of his own safety and great devotion to duty.

Temporary Captain John Pearson McVey, R.A.M.C.

He organized and established aid posts near the front line under heavy shell fire and dealt with a large number of casualties. Though short of dressing, stretchers and bearers, he successfully evacuated many wounded, while ten out of eighteen of his staff were casualties.

Captain Charles Graham Meade, R.A.M.C.

While brigade head quarters were being shelled this officer worked unceasingly, attending wounded gunners and infantry. Later, on receiving an urgent message from a battery, he set off by himself through a heavy barrage, and though suffering from the effects of gas, performed his duties in the open, regardless of all danger. He behaved splendidly.

Captain Harry Middleton, R.A.M.C.

During an enemy attack, though suffering from the effects of gas, he remained at duty dressing wounded for four days until ordered to hospital. He was frequently under shell fire, and had to change his aid post several times.

Temporary Captain Alexander Dryden Moffatt, R.A.M.C.

He worked continuously at an advanced dressing station under shell fire for eighteen hours, dressing a large number of wounded. The dressing station was hit three times, but he carried on his work in a cellar.

Temporary Captain Duncan Collingwood Ogilvie, R.A.M.C.

While in charge of a walking wounded collecting post, for sixteen hours he worked single-handed under heavy shell fire, dressing and evacuating wounded. Later, he reopened a dressing station which had been evacuated and worked there for forty-eight hours.

Temporary Lieutenant James Carter Ogilvie, R.A.M.C.

As medical officer of the battalion he did excellent work during four days' strenuous fighting. He was continually up and down the firing line, personally attending to wounded men, and caused all men known to be wounded to be got away. He set a very fine example to his stretcher-bearers.

Captain George Perkins, R.A.M.C.(S.R.).

After being in the firing line all day he went out after dark with stretcher-bearers and stayed out most of the night tending wounded.

Temporary Captain Howard George Pesel, R.A.M.C.

He evacuated all the wounded under severe and almost continuous shell fire. His three successive collecting posts were destroyed by shell fire, and he himself was wounded, but he remained at duty, declining to be relieved.

Captain Aubrey Radford, R.A.M.C.

He established a dressing station, collected a large number of wounded cases, and by his own personal example and initiative arranged for the evacuation of those wounded and so saved them falling into the hands of the enemy. The whole time his work was carried out under heavy shell fire.

Temporary Captain (acting Major) Alexander William Rattrie, R.A.M.C.

He dressed and evacuated wounded in an advanced dressing station under heavy shell fire for many hours. When the station became practically destroyed he, though gassed, succeeded in evacuating all the wounded over open country to another dressing station, where he continued to work until that, too, became untenable. He showed great pluck and determination.

Temporary Captain Stanley Alfred Riddett, R.A.M.C.

This officer was the only medical officer in a village that was being very heavily shelled by the enemy, and where our troops were suffering severe losses. He showed complete and self-sacrificing disregard of danger, dressing the wounded and arranging for their removal, moving about the village, which he would not leave until he had satisfied himself by personal investigation that all the wounded had been evacuated. His gallant behaviour and devotion to duty undoubtedly saved many lives.

Temporary Captain (acting Major) John Rodger, R.A.M.C.

The position of his advanced dressing station had to be moved on four separate occasions, and on each occasion he evacuated the wounded with great skill. It was largely due to the fine example set by him under heavy machine-gun and rifle fire that the wounded were all got away. He has shown a fine spirit, and set a great example throughout.

Captain (acting Major) John Rowe, R.A.M.C.

Although it was known that the enemy had penetrated the line and the area in rear of the advanced dressing station was being organized for defence, this officer never lost touch with the regimental aid posts. He made many journeys throughout the day, at all times under heavy fire, personally superintending the evacuation of the wounded.

Temporary Captain George Wheldale Stanley, R.A.M.C.

For conspicuous gallantry and devotion to duty in going to the assistance of four wounded men, dressing their wounds, and getting them removed to a place of safety under heavy shell fire. His disregard of danger not only probably saved their lives, but was an inspiration to others.

Captain James Steel, R.A.M.C.(S.R.).

This officer was one of the few regimental medical officers who were with their unit during the whole period of withdrawal. He was indefatigable in dressing the wounded, often under fire, and when he had to move, invariably assisted himself in evacuating the worst cases. Although twice wounded himself, he refused to leave his work, except to have his wounds dressed.

Temporary Captain George Edward Stephenson, R.A.M.C.

He organized the most advanced dressing station in the area, attending to casualties of all units under heavy fire, in the most adverse circumstances, and in the open. His devotion to duty was of the greatest value.

Temporary Captain John Stevenson, R.A.M.C.

He attended to wounded under heavy shell fire. Subsequently, he went out into "No Man's Land" under heavy machine-gun fire and brought in a wounded officer. His coolness and devotion to duty saved many lives.

Temporary Captain (acting Major) Robert Svensson, R.A.M.C.

Under heavy bombardment he led motor ambulance wagons to an advanced dressing station, and brought away all helpless cases. Later, he led a convoy of ambulance wagons under shell and machine-gun fire to aid posts, and continued going backwards and forwards until he had got all wounded away. He saved many wounded from being abandoned to the enemy, and did fine work.

Captain William Taylor, R.A.M.C.

In his work amongst the batteries he remained to the very last in each position, attending to the wounded officers and men, and was untiring in his efforts to assist in every way.

Captain James Ettershank Gordon Thomson, R.A.M.C.

When his dressing station was blown up, although suffering from gas, he continued to dress his wounded, and successfully evacuated all his stretcher cases, working till he was quite exhausted. On another occasion, when a regimental aid post was blown up, he carried on dressing the wounded, and successfully evacuated them. His devotion to duty was an inspiration to all under him.

Captain William Ernest Tyndall, R.A.M.C.(S.R.).

For five days this officer dressed wounded under intense fire, and during the withdrawal he many times stayed behind without assistance to look after them, being in imminent danger of capture. His unceasing efforts resulted in the saving of many officers and men. Though by no means physically strong, he never relaxed his efforts, and his cheerful example greatly heartened the men.

Lieutenant Douglas James Valentine, R.A.M.C.(S.R.).

He attended to the wounded in the open under heavy shell fire and superintended their evacuation under most difficult circumstances.

Captain (acting Lieut.-Colonel) Gifford Traill van der Vijver, R.A.M.C.(S.R.).

He continued to work at his dressing station under very heavy hostile shell fire until it was no longer tenable, and before evacuating, under orders, cleared all casualties in the vicinity and brought his unit away with all the equipment.

Temporary Captain John Walker, R.A.M.C.

In carrying on his work at an aid post which was continually being shelled his organization and arrangements for the work were admirable; 120 wounded passed through his hands, all congestion was avoided, and the dispatch with which they were collected and evacuated probably saved several lives.

Temporary Lieutenant Rowland Ward, R.A.M.C.

Whilst under a very heavy barrage this officer attended to the evacuation of numerous casualties. The aid post, situated in a small quarry, was subjected to prolonged bombardment and heavily gassed; it was crowded with stretcher cases and there were fifty more lying in the quarry. He went round all the cases, adjusting gas masks. The aid post was not even splinter proof, and received one direct hit, but he continued for three days and nights attending to the cases without sleep, and eventually got away the last of the casualties.

Temporary Captain Edward Parker Wallman Wedd, R.A.M.C. (killed in action).

He traversed shell-swept roads and searched trenches under heavy fire till he found and tended the many wounded.

Captain (acting Major) Eric Watson Williams, R.A.M.C.(S.R.).

He maintained advanced dressing stations under heavy shell fire until the last possible moment, and personally superintended the evacuation of the wounded. Through his energy and devotion to duty all cases were cleared without delay.

Captain (acting Major) Arthur Lowndes Yates, R.A.M.C.

He maintained his medical posts under heavy shelling as long as it was possible, and was responsible for the collection and evacuation of several hundred wounded of other divisions, as well as a great many of his own.

Captain William Clarke Givens, C.A.M.C.

He organized and maintained for two days under shell and rifle fire a first-aid post, rendering aid to a large number of cases. Next day he established a dressing station, where he worked for sixty hours without relief.

Captain Geoffrey Penrose Arnold, A.A.M.C.

During a night counter-attack this officer formed his regimental aid post in the open just in front of the jumping-off line, and continued to dress wounded there for twenty-four hours under continuous fire. The medical officers of two other battalions both became casualties early in the attack, and he attended to the wounded of these battalions besides his own. His coolness and splendid work saved scores of lives.

Captain Ernest Noel Brougham Docker, A.A.M.C.

During an attack he followed up with his bearers, picked up guides, gained touch with the regimental aid posts, and organized a line of bearer relays. This was done at night under machine-gun and heavy shell fire.

Captain Frank William Fay, A.A.M.C.

While in charge of the transport and evacuation of wounded from the divisional main dressing station, the station was twice hit by shells, but he succeeded in clearing all wounded, exposing himself in bringing up ambulance cars and showing great energy and devotion to duty.

Captain Ewing George Thomson, A.A.M.C.

This officer tended wounded in the open from 4 a.m. to 11 a.m. one morning. During this period he was under very heavy high explosive and gas bombardment, but, although suffering from the effects of gas, he stuck to his aid post. His rapidity in evacuating wounded from the gassed area no doubt saved many lives.

Temporary Captain Basil Sampson, S.A.M.C.

During a counter-attack on the enemy positions this officer, with another, improvised an advanced dressing station and relay posts under the most difficult conditions. They remained at a point considerably forward, under very heavy shell and machine-gun fire, and it was largely due to their efforts and able dispositions that a great many wounded were dressed and evacuated who otherwise might have fallen into the hands of the enemy when later they forced back our line.

Temporary Captain William Smith, S.A.M.C.

During a counter-attack on the enemy positions this officer, with another, improvised an advanced dressing station and relay posts under the most difficult conditions. They remained at a point considerably forward, under very heavy shell and machine-gun fire, and it was largely due to their efforts and able dispositions that a

great many wounded were dressed and evacuated who otherwise might have fallen into the hands of the enemy when later they forced back our line.

A special Supplement to the *London Gazette* dated September 24th contains a further list of awards "for conspicuous gallantry and devotion to duty in the field." The list includes the following medical officers:

D.S.O.

Major (temporary Lieut.-Colonel) Albert Richard Henchley, R.A.M.C.

In two days he succeeded in evacuating some 1,500 patients. He got away his personnel and lorries under shell and machine-gun fire, and proceeded to a hospital elsewhere, from which he evacuated 300 wounded by ambulance trains. His unit was the last to leave the town. His coolness and resource were the means of saving a large number of wounded from falling into the hands of the enemy.

Bar to the Military Cross.

Captain (acting Major) Roger Errington, M.C., R.A.M.C.

He remained in his dressing station under machine-gun fire until it was evacuated. He then took another dressing station and again under machine-gun fire evacuated all patients. It was entirely due to his coolness and devotion to duty that these wounded did not fall into the hands of the enemy. (M.C. gazetted January 14th, 1916.)

Temporary Captain Paul MacDonald Little, M.C., R.A.M.C.

In attending to wounded in the front line under heavy shell, machine-gun, and rifle fire. His example of coolness and devotion to duty caused a large number of wounded to be successfully evacuated from the front line. (M.C. gazetted September 26th, 1916.)

Temporary Captain Alan Cowan Mann, M.C., R.A.M.C.

Hearing that a number of wounded had been left in a dressing station, he organized bearer parties and led them through heavy shell fire to the dressing station and evacuated all the wounded. Through his devotion to duty many wounded were cleared who would otherwise have been abandoned. (M.C. gazetted July 26th, 1918.)

Captain (acting Major) Robert Taylor, M.C., R.A.M.C.(S.R.).

While in command of an advanced dressing station he worked with untiring energy, attending to and supervising the loading on to cars of all cases. The dressing station was hit several times, and eventually came under machine-gun fire, but he succeeded in clearing all wounded. He showed fine determination and devotion to duty. (M.C. gazetted August 16th, 1917.)

Military Cross.

Captain Alfred Lang Bodley, R.A.M.C.

When a dug-out was heavily shelled and blown in, he rescued a man from the most dangerous place where three men lay buried, and attended to the men affected, assisting to get them away. In one case he tried for hours to save a man who had lost consciousness, and during this time lost consciousness himself, but continued his work on recovering. His personal example of courage was of the utmost assistance.

Captain James Iver McIver Chirnside, A.A.M.C.

For conspicuous gallantry and devotion to duty while attending to wounded men under heavy shell and machine-gun fire. During the retirement of the rearguard squadron he attended to the wounded while the enemy were firing at a distance of 300 yards. He showed great devotion to duty.

Temporary Captain William Cooper, R.A.M.C.

During an enemy attack he was unremitting in his attentions to wounded under fire, and stayed behind in a village with a small salvage party attending to a number of wounded and gassed officers and men who came in. He behaved splendidly.

Temporary Captain Guy de Hoghton Dawson, R.A.M.C.

During an arduous period of retirement, lasting for some days, he worked with unflagging energy in attending to the wounded under heavy fire, evacuating them successfully, on one occasion when the enemy were within forty yards of the regimental aid post. His example helped and encouraged all those under his command.

Captain (acting Major) Robert Alfred Greenwood, R.A.M.C.

When a bridge was blocked and partly submerged by a fallen tree he supervised the clearing, and helped to carry the wounded across under heavy shell fire on both banks. Though severely shaken by a shell bursting and partially burying him, he carried on until all the wounded were safely across the canal.

Temporary Captain Norman McAlister Gregg, R.A.M.C.

During a raid he untiringly attended to the wounded under heavy enemy fire until the last man was cleared, and showed great coolness and devotion to duty. He worked persistently throughout the raid in the open, and searched for any wounded that might have been overlooked. He behaved splendidly.

Captain Henry Taylor Lamb, R.A.M.C.(S.R.).

When an outpost company were suffering numerous casualties from enemy bombardment he proceeded to the locality at once and under heavy shelling got all the wounded moved to shelter, remaining with the company until the bombardment ceased. During a trying time he showed splendid devotion to duty.

Temporary Captain William Lumsden, R.A.M.C.

While in charge of bearers carrying wounded over an exposed hillside swept by shell and machine-gun fire he saw a bearer fall. He at once ran to him and dressed his wounds, after which he remained with him until dusk, the man being unable to walk. He then assisted him across country to a place of safety. His conduct was splendid.

Captain John Eric McGlashan, A.A.M.C.

While in charge of the evacuation of wounded during an attack, he visited his various posts under heavy shell and machine-gun fire, and was largely responsible for the successful evacuation of the wounded.

Captain (acting Major) Kenneth Arly Porterfield Rynd Murray, R.A.M.C.

While in charge of an advanced dressing station during an enemy attack he worked continuously for two days, often under heavy shell fire, and evacuated over 200 cases. Owing to the constant change of position he had great difficulty in keeping touch with the medical officers of the regiments he was clearing, and only succeeded in doing so by visiting them all personally on several occasions. His courage and magnificent devotion to duty set a fine example to all his men.

Temporary Lieutenant Thomas Gordon Playford, R.A.M.C.

Assisted by an orderly, he dressed the wounds of several officers on the roadside under heavy shell fire. Later, he established a dressing station in a village which was rapidly being enveloped by the enemy, and succeeded in clearing all his casualties before it was evacuated.

Lieutenant (acting Major) Raymond Stowers, R.A.M.C.

While in command of an advanced dressing station, subjected for hours to heavy shelling, he got all cases away in a most expeditious manner. Subsequently, on the near approach of the enemy, he got his personnel and cars away, and opened a temporary dressing station elsewhere, and continued to evacuate wounded till ordered to retire. He showed fine devotion to duty.

Captain Hugh Compson Trumble, A.A.M.C.

Under heavy enemy barrage he pushed forward some 600 yards with his medical personnel to a ledge, where by his capable organization he successfully evacuated quantities of wounded. He worked for three days and nights, and his quiet courage had an excellent effect on wounded and stretcher-bearers alike.

Captain Cecil McLaren West, R.A.M.C.(S.R.).

On three occasions he went through heavy shell fire to attend casualties in batteries which were under fire, the roads all the time being heavily shelled with high explosives, shrapnel, and gas shells.

Captain (acting Major) Maurice Ulick Wilson, R.A.M.C.

During an attack he continually attended wounded at the advanced dressing station, which was constantly under artillery fire (four shells dropped within a few yards of the operating table). The work was continued without cessation, so that 247 cases were evacuated in thirty-eight hours. He showed fine devotion to duty under very difficult circumstances.

The Military Cross is also awarded to temporary Quartermaster and honorary Lieutenant W. P. C. Thomas, R.A.M.C., for conspicuous gallantry and devotion to duty in evacuating wounded under sustained shell fire.

The Military Medal has been conferred upon one matron and five nursing sisters of the Canadian Army Medical Corps for distinguished service in the field.

The King has granted Miss Jessie Anne Scott, M.D., unrestricted permission to wear the Insignia of the Fourth Class of the Order of St. Sava, conferred upon her by the King of Serbia in recognition of services as the surgeon at the Scottish Women's Hospital at Ostrovo.

The name of Major (temporary Lieut.-Colonel) R. M. Barron, I.M.S., was incorrectly printed as Barrow in the *London Gazette* of March 26th, 1918, in the announcement of his promotion to be Brevet Lieut.-Colonel (BRITISH MEDICAL JOURNAL, April 6th, 1918, p. 411).

NOTES.

GASTRO-INTESTINAL DISEASES IN GERMAN SOLDIERS.

KORACH[1] of Hamburg has been impressed, in common with some other German observers, by the frequency among soldiers of an absence of free acid in the stomach or even a complete failure of gastric secretion. At least 25 per cent. of the men so affected had suffered from gastric troubles for years, and had been obliged to adopt a special diet. Some showed evidence of chronic mucous gastritis, but in the majority the secretory disturbance was an isolated phenomenon. Many as the result of the vicarious activity of the intestine escaped any serious nutritional disturbances and only a few developed gastrogenous diarrhoea.

A more important group of patients consisted of those whose gastro-intestinal functions had been perfectly normal until they had been sent to the front. In them the acute disturbance of gastric secretion was due mainly to hasty meals, insufficient mastication, immoderate smoking, and black coffee, milk being unobtainable. Other causes were the dehydration of the system caused by excessive sweating due to long marches and psychical factors such as fear or excitement. Korach considers that soldiers suffering from chronic absence of gastric secretion with gastrogenous diarrhoea are not fit for service at the front or on the lines of communication; they should be employed on home service in munition factories, and should not be kept for long periods in hospital.

The acute cases need treatment in hospital, where a special regimen can be carried out. A purely vegetarian diet has yielded satisfactory results, and spa treatment at warm sodium chloride springs has also been of service. Gastric ulcer occurred only in soldiers who had suffered for years from gastric troubles, which had been kept in check by following a strict regimen impossible in the army. Although a sufferer from gastric ulcer may "easily

[1] *Berl. klin. Woch.*, 1918, lv. 181–183.

on" at the front, as a general rule all cases of gastric ulcer and most cases of duodenal ulcer should, Korach thinks, be discharged as permanently unfit. In determining the fitness for service of sufferers from nervous dyspepsia, the medical officer should be guided by the state of nutrition, weight curve, and general psychical condition. Cases of pronounced neurasthenia or of hysteria with nervous dyspepsia were, it was found, better treated in general wards than special hospitals for gastric disorders. As the general condition improves the gastric symptoms subside, and the patients can unhesitatingly be declared fit for active service.

As regards the influence of war diet on gastric secretions, the reduction of meat, eggs, and fat in the diet, and their replacement by vegetables rich in cellulose, caused considerable changes in the secretions. Cooked vegetables are only feeble stimulants of the gastric secretion, while coffee, meat extract, fish and meat, which possess active stimulant properties, have to a great extent disappeared from the present German diet. The addition of meat to the diet for a short period frequently causes the secretory anomaly to disappear.

Physical Re-education in America.

Reports compiled at five general hospitals show the progress that is being made by the Reconstruction Division of the Medical Department of the United States Army. Of 537 cases sent to these institutions from Europe and base hospitals in the States, 151 are now able to return to full duty and 212 to partial duty. Only 39 of these men will be unable to follow their former employments. From the time the wounded soldiers have returned home an effort has been made to keep their minds and hands occupied. Curative education has been carried out with satisfactory results. The men have shown interest in "ward occupations," which consist of wood carving, knitting, weaving, block printing, bead work, embroidery, knotted work, typewriting, and educational work. When the men are able to leave the wards they are instructed in shops and schools. Quartermaster repair shops are placed near some of the hospitals, and these are used for instruction in mechanical occupations. Where opportunities for academic studies have been provided, the men have shown genuine desire to improve their minds with the object of enabling themselves better to succeed in civil occupations.

Ireland.

Central Midwives Board.

The following representatives of the medical profession are among the appointed members of the Central Midwives Board for Ireland: Dr. E. C. Bigger, appointed by the Local Government Board for Ireland; Dr. H. T. Warnock, appointed by the Local Government Board for Ireland after consultation with the county councils and county borough councils; and Sir A. J. Horne, Sir W. J. Smyly, Sir John W. Byers, and Professor H. Corby, elected by the registered medical practitioners resident in Ireland.

Poor Law Medical Officers' Salaries.

At a meeting of the Poor Law medical officers of the Omagh Union, Dr. Edward Thompson, D.L., in the chair, it was unanimously resolved that as the dispensary doctors had continued from a humane point of view to attend to urgent dispensary cases, and as the guardians had made no reasonable effort to meet the doctors' demands, on and after September 21st the doctors would be reluctantly compelled to cease all kinds of dispensary work in order to make their strike more effective. The remarks of the chairman at a recent meeting of the board were strongly condemned, inasmuch as he had drawn a comparison between the medical officers of the union and the assistant road surveyors, the latter only repairing roads, while the doctors were called at all times of the day and night to attend the sick and wounded and to relieve suffering. It was stated that an increase of 1½d. in the £ on the rates would give the doctors the maximum salary they demanded, and this they did not consider unreasonable, as the cost of living had increased by almost 75 per cent., and the cost of locomotion from 4d. to 9d. per mile. The dispensaries will remain closed during the week.

The Baltinglass board of guardians at their last meeting approved the following graded scale of salaries for their medical officers: Initial salary for all Poor Law medical officers in the union to be £175 per annum, with annual increments of £10 until a maximum of £250 is attained. The scale would be applied retrospectively from the dates of their appointments, and the Local Government Board has been requested to sanction this scheme.

The Trim board of guardians have approved for their Poor Law medical officers initial salaries of £175 per annum, reaching a maximum of £350 after fifteen years, with retrospective application.

Correspondence.

EARLY TREATMENT OF MENTAL DISORDER.

SIR,—Every man engaged in general practice must be glad to see the leading article in the JOURNAL of September 21st on the early treatment of mental disorder, which has been brought to notice by Dr. Easterbrook's interesting report. The same question has also been brought forward in Dr. Lionel Weatherly's recent book *A Plea for the Insane*. There are a few points which I as a general practitioner should like to emphasize. We all of course realize the extreme importance from everybody's point of view of treating mental disease in its very earliest stages, but there are difficulties in the way. First of all, the difficulty of recognizing the disease in its very early stages; and to the general practitioner falls this very difficult and important task. We as family medical attendants have opportunities that no one else can have, but unfortunately for most of us education and teaching in this particular work has been sadly deficient. Now that our system of education, both before qualifying and after, is, we hope, about to be reformed, it is a convenient time to press the claim of this particular branch of our study to greater consideration. Given the opportunity, I am sure that we should all welcome the chance of post-graduate clinics, when we might learn to recognize and to treat properly these patients.

But having found the disease, our next difficulty is to find the means of treatment. The asylum is worse than useless, so is the nursing home; there are practically no institutions where such cases, uncertified, can be taken. The "single house" is not always by any means satisfactory—it is too often run merely as a business concern pure and simple, or it is much too expensive for the majority of one's patients. We want a list of such houses published by some authority so that we might be able to say where they are to be found, and which are suitable for the early cases; but none of these things are possible until the law is altered, and simple notification allowed instead of that unfortunate certification which under the present circumstances too often damns a patient for life. The present state of affairs is often most distressing to every one concerned; at times it practically means having to wait until a case is worse before proper treatment can be obtained, and then it may easily be too late. It is just as if there was a law that a hernia was not to be operated on until it was strangulated, or a consumptive admitted to a sanatorium until the lung tissue was breaking down.

To one who is not a lawyer the required change in the law books is obvious, and so simple that it is astonishing that it has not been made before.—I am, etc.,

Bradford-on-Avon, Sept. 24th. CHARLES E. S. FLEMMING.

ATTENDANCE OF R.A.M.C. OFFICERS AT SCIENTIFIC CONGRESSES.

SIR,—While serving as Surgeon-General of the 2nd Army Corps it was my duty to inspect very many hospitals and meet and consult with many medical officers as to the treatment of sick soldiers in their charge over a large English area. To keep pace with scientific progress I proposed to attend the annual meeting of the British Medical Association as usual, and on my return to give the inspected officers any opinions gathered at the meeting.

As this was a public duty I applied to my military chief, Field Marshal Sir Evelyn Wood, to submit my claim for travelling and personal allowance to the War Office for sanction. In my opinion, as a student of the military history of England, no more generous hearted or more considerate military chief than Sir Evelyn Wood has ever appeared in the British military service at any epoch. He is and ever was a true friend of the soldier.

When the letter reached the War Office the eternal

"No" came back as a reply. It was the rubber-stamp word of that epoch in the War Office.

Of course I went to the annual meeting, attended the conferences, and in due course returned to my command, and, where needed, referred to what I had heard and seen. I paid my own expenses.

I propose now to put a stop for ever to any such refusals to pay the charges of officers attending scientific meetings. Here is the scheme. Five thousand pounds or other agreed on sum to be placed yearly to the credit of the Director-General Army Medical Service. He, and he alone, to have the power of allotment of sums of money to chosen officers to attend meetings, to visit foreign armies and make special technical reports, and also to visit countries liable to be future theatres of war, and to furnish helpful notes as to conditions existing there. This sum will be well invested by the nation if it encourages our able young officers to see the world and make special studies for the public good.

To me personally in the past such grants would have been very acceptable indeed in my scientific visit to Bagdad and Mesopotamia generally in 1873, and to numerous foreign armies of the world after that year. Not only did I receive no grant in aid, but my valuable sanitary and descriptive report on Mesopotamia, compiled after an expensive journey, has not been reprinted for the present war; nor is it even known to exist by average officers. Yet it was compiled after personal investigations made on the spot, and favourably reviewed by the *Times* in 1876.

I would give further power to medical directors of military districts to call up once or twice a year the medical officers of their command to a central place, and to provide lectures and discussions by specialists of standing for a three or four days' session for them. It is a mistake to imagine that we have exhausted the resources of civilization; we are only at the beginning of things in such matters.

What we need is definite power in the hands of the D.G.A.M.S. to foster and develop our scientific personal readiness for any duty in peace or war. If he is a failure then we all fail. I would throw the financial responsibility for the distribution of these scientific grants in aid entirely on the shoulders of our medical Director-General.—I am, etc.,

George J. H. Evatt, M.D.,
Major-General (R.P.).

Junior United Service Club,
London, September, 1918.

THE FUTURE OF THE MEDICAL PROFESSION.

Sir,—I have recently pointed out that the Royal Society of Medicine is in an exceptional position to bring together all important sections of the profession to consider what changes in the organization of medicine are necessary to meet the new needs of the time. May I recur to the subject and state my reasons a little more at length?

We are obviously on the eve of great changes in the organization of medicine and its relations to the State, changes which may profoundly affect the future well-being of the nation. The Government has a measure in hand whose provisions may be exceedingly far-reaching, and this measure it is keeping secret from the profession. We cannot forget that on the last occasion when the Government pursued this subterranean policy the proposals were the worse for it and their amendment was imperfect.

It cannot be too clearly enunciated that we medical men are alone in possession of that completeness of knowledge requisite to the determination of what is or is not wise in the way of medical organization and of the relations of medicine to the State. This knowledge implies a national duty, and we are bound to ask ourselves what has been done to bring together all responsible and capable British medical opinion to prepare for such legislation and advise upon it.

I understand that a very excellent committee of the British Medical Association is considering the matter and that the two London Colleges have also appointed a joint committee; further, that there is a likelihood of these two committees conferring with each other.

Now I should be sorry to say a word which could be construed into disrespect of these committees. It would indeed be absurd to treat them otherwise than with deference. But can they be regarded as sufficient? I think not, and for these reasons: What is needed is a body of medical opinion, widely representative, collectively non-political, avowedly scientific, and commanding the confidence of both the public and the profession. Moreover, here arises a fundamental question. Is this matter of medicine and the State a question of England, or Britain, or of the British Isles, or of the whole empire? I strongly hold it is an imperial question. Even if public health administration throughout the empire is to be run in geographical water-tight compartments, the method of one compartment will presently affect all. I feel sure that what is wanted is an imperial medical council, with representatives from all parts of the empire, to consider the proper directions and limits of medical legislation. The British Medical Association provides, it is true, an empire-wide deliberative body, but it is regarded, and rightly regarded, both by the public and by the profession as a political body entrusted with the special interests of the medical profession; the public therefore cannot be expected to look to it for unbiassed guidance. The two English Colleges, highly distinguished as they are, are only two, and are only English. Furthermore, these two separate committees supply no "unity of command."

The only body we possess which is professedly imperial, obviously non-political and recognizedly scientific, already representing all-important scientific medical activities, is the Royal Society of Medicine. It stands out as the one body capable of co-ordinating and unifying throughout the empire medical opinion on this vastly important subject with the requisite prestige and measure of public confidence.

To object that such a function is outside its scope is, I submit, to misunderstand the whole position. If the problem is to be solved safely, it must be solved scientifically. It must not be solved politically.

On such a council the British Medical Association and the two English Colleges would, of course, be represented, and I imagine that these bodies would willingly co-operate in calling the larger council into existence. It seems to me the proposal is one which merits consideration. We have at present excellent representatives available from every part of the empire. I cannot but think that if British medicine, through lethargy, war-tiredness, defect of outlook, or any other misfortune, should fail to rise to the height of this great occasion and to take the lead where its leadership is so clearly called for, it will deserve whatever evil may befall it, and will earn the condemnation of thinking people. "There is a tide in the affairs of men."—I am, etc.,

Exeter, Sept. 19th. W. Gordon.

SEX RATIO AND SEX DETERMINATION.

Sir,—In your issue of September 21st, 1918, I note a short editorial article under the heading of "Determination of Sex," based on the work of Dr. Siegel as analysed by Dr. Ada Nilsson. The paper is apparently published in Swedish, and consequently, as I have no knowledge of that language, the actual material on which the rather sensational deductions are based is denied me. Still I have little hesitancy in saying that even if the observations are accepted, the conclusions drawn must be incorrect. The facts stated are so striking that they must have some reflection in the lower animals. Observation on the period between the pro-oestrum and coition and sex of resulting offspring have been made frequently, and no abnormal sex ratio has been noted. There is evidence to believe that an oestrum exists in the human female; at any rate, it is a matter of common knowledge that coition is more apt to occur during the period to which it corresponds—that is, during the first post-menstrual week than during the seven days preceding the monthly period. Hence the proportion of males to females in our population should be about six to one. It is to be regretted that much confusion arises from the fact that sex determination is only one of many circumstances which contribute towards the sex ratio at birth. If we wish to investigate this interesting problem in man we must retravers the road which nature has already followed before we claim that a factor has been discovered which influences the chances of a male or female being produced. The following circumstances, therefore, would need consideration:

1. The ratio at birth may be considerably modified by a pre-natal differential death-rate. The statistical records of Paris, Hamburg, Copenhagen, and other cities furnish data which show beyond question that more male than female conceptions are lost in the pre-natal period, and from calculations that I have made, based on these and other figures, it seems likely that the sex ratio at conception is approximately three males to two females.

2. It is possible—here of course we have no data—that the female conception may graft itself on to the lining membrane of the uterus more easily than the male.

3. There is reason to believe, though I am unaware of any reliable series of figures, but am basing this statement on the opinion of breeders of animals and also that of some of my medical colleagues, that the gestation period for males is slightly longer than that for females. If we accept that there is anything up to a five-day difference, then I think that the facts narrated in the paper mentioned can be easily explained.

For example, if a group of women are at risk for fourteen days, and to get the exact day at which conception occurred, we take 280 days for all births, and if in fact the females only took 278 days in gestation and the males 282, then our records would show that the majority of boys were conceived during the first portion of the fourteen days, and the majority of the girls during the latter part of that time. Personally, I am inclined to believe that this is the correct explanation of the facts narrated. Whether this is so or not, the contention still remains that the research as it stands concerns sex ratio only; it cannot concern sex determination until all secondary factors have been considered and allowed for. To exemplify this point further, I may quote Hertwig's experiments with the frog, where he showed that if fertilization is delayed for sixty-four hours, the proportion of males to females rises to seven males to one female. Kuschakeivitsch, extending the period to eighty-nine hours, got a pure male colony. In man, when allowance is made for the secondary factors influencing the sex ratio, a female excess should occur in elderly parturients. In actual fact, we find a slight tendency to a male excess. It is easily conceived that the movements of the female genitalia are not so active at this period as during earlier years, and hence a certain delay in the fertilization of an ovum may occur, and, as in the frog, there is a rise in the male-female ratio. This, of course, is a question of sex determination.

What has been discussed in Dr. Siegel's work would seem to be a question of sex ratio, arising in all probability from the slightly different gestation periods for the male and female. Even if this is so, the work is of considerable importance, as I believe this is the first occasion on which a statistical attempt has been made to estimate accurately the period of gestation in man.—I am, etc.,

R. J. EWART, M.D.,
September 26th. Medical Officer of Health, Barking.

THE TREATMENT OF SCARLET FEVER IN THE PATIENT'S HOME.

SIR,—An article was published in the BRITISH MEDICAL JOURNAL of August 13th, 1887, p. 351, in which I advocated the use of carbolized oil in the treatment of scarlet fever. The details are given in the article, "The prophylactic advantages of the early and continued use of carbolized oil in scarlet fever." In a letter by Dr. Watson of Belfast, published in the JOURNAL for September 14th, he strongly urges the adoption of the "Milne method," in which eucalyptus oil is used. Personally, I prefer carbolized oil. Anyhow, my experience confirms all that Dr. Watson says. After over thirty years' experience, I am convinced that scarlet fever can be treated in the home, if the instructions are carefully carried out. In my annual report for Bacup for 1913 I make the following statement *re* scarlet fever: "There were 79 cases notified during the year. All were of a mild character, none fatal. For over twenty-seven years we have supplied to all families 'carbolized oil' for rubbing over the body, with excellent results. It is very rarely that a second case occurs in the same family, if the instructions are thoroughly carried out. None of the patients are removed from their homes." Scarlet fever, like some other infectious diseases, is of a much milder type. I earnestly hope that Dr. Watson's appeal for its more general adoption will find general support.—I am, etc.,

Blackpool, Sept. 23rd. JOHN BROWN, M.D.

SIR,—The treatment of scarlet fever and its results have always been of interest to me, as the two districts, separated by a railway, into which this practice falls, show different results. On the north side, in eighteen years there has been no death in cases treated at home. On the south side, about sixteen years ago, one death occurred from a bronchopneumonia in a child. Of other two cases, one, of pneumonia, died in seven days. Her sister developed the rash of scarlet fever on the day of burial, a fact that strengthened the diagnosis of scarlet fever in the dead child.

The second case had a pleuropneumonia, with opisthotonos, simulating cerebro-spinal fever. His brother, I think it was, developed the rash of scarlet fever, and was seen by the medical superintendent of the fever hospital before removal.

Beyond these three cases there have been no deaths, in a fairly extensive practice. The sequelae have been almost *nil*, and the complications as few. The treatment is—an upstairs room, a wooden floor, bed, plain food, and, as medicine, liquor ferri perchloridi in water. No case, *after treatment*, has been followed by a second in the family, except once, during an epidemic. Though not perfect, the results are fairly good.—I am, etc.,

Hockley, Birmingham, Sept. 17th. JOHN W. DUNCAN, M.B.

FACIAL PARALYSIS.

SIR,—Lieut.-Colonel Dennis, writing in the JOURNAL of September 21st, rightly insists upon the importance, in Bell's palsy, of antagonizing the pull of the muscles on the sound side of the face. This end can be achieved in a very simple way—namely, by applying a narrow slip of (flesh-coloured) plaster, on the paralysed side, from the angle of the mouth to the lobe of the ear, or thereabouts. By suitable adjustment perfect symmetry can in this way be obtained. The plaster admits of ready removal and application.—I am, etc.,

London, W., Sept. 22nd. HARRY CAMPBELL.

THE CENTRAL POOL.

SIR,—I have read with interest the report by the Insurance Acts Committee on the method of calculating the remuneration of doctors under the Insurance Acts (M.3/1918–19). It is a very clear statement of the method by which the Central Pool is made up and distributed. The chief difficulty, I have always felt, is that areas whose index register is kept as accurately as possible are penalized in favour of areas where the register is kept carelessly. Undoubtedly the best and cheapest plan would be for the Government to take over the full working of the Insurance Act and do away with the cumbrous, expensive, and unsatisfactory machinery of approved societies. This must be done if the Act is amended, as it should be, in favour of the dependants of persons at present insured.

The plan suggested by the Government actuary that our basis of payment should be the number of Insurance stamps sold in a year would be disastrous to us. To put 9s. into the pool for medical benefit for each fifty-two stamps presupposes that every insured person is at work every week in the year, and would mean, for instance, that only 4s. 6d. would be put in the pool for a man who was ill and under medical treatment for six months in the year and corresponding amounts for longer or shorter illnesses, or periods of idleness through want of work or strikes. This suggestion should therefore be ruled out at once as untenable.—I am, etc.,

North Shields, Sept. 24th. F. C. MEARS.

THE OPERATION FOR VARICOSE VEINS.

SIR,—In the JOURNAL for September 14th, p. 286, Mr. F. J. Steward describes a method of operating with the technique of which I fully agree, but he omits one point which appears to me an essential feature for permanent success. It is ligature of the saphenous vein at the top of the thigh. I never operate, even on slight cases, without

doing this, for the valves are pretty sure to be inefficient in all cases of varicose veins lower down, whether the saphena itself appears to be dilated or not.

I first saw the operation for varicose veins done by the late Sir Henry Greenaway Howse at Guy's, about the year 1878, and I have certainly done it some 500 times since. Sir Henry Howse used the tourniquet, but he applied no ligature whatever, trusting entirely to a firm bandage. At that time ligature was never used at Guy's. Even in continuity a surgeon would cut an artery and twist both ends. Later, when the value of absorbable ligature was recognized, no doubt he, like the rest of us, made use of it.—I am, etc.,

Liverpool, Sept. 24th. FRANK T. PAUL, D.Sc., F.R.C.S.

The Services.

ROYAL AIR FORCE MEDICAL SERVICE.

CONDITIONS OF SERVICE.

WE have received from the Air Ministry, for publication, the following memorandum, which has been issued this week, with regard to the terms and conditions of service in the Royal Air Force Medical Service.

General.

1. For the present two main, or special, divisions of the medical work of the Royal Air Force will be recognized, namely—

(*a*) Care of the effective personnel, and
(*b*) Care of the non-effective personnel.

2. The former may be considered to represent the hygiene and preventive side of the work and to include such special subjects as selection and care of the flying personnel, maintenance and improvement of the physical efficiency of all ranks, sanitation, etc. The latter represents the curative side of the work, and certain subdivisions that Air Force experience has shown to be necessary will be recognized—namely, neurology, surgery of the eye, throat, nose, and ear, and plastic surgery, etc., in addition to general medicine, surgery, and pathology.

3. Subject to the exigencies of the service, a medical officer will be selected for, and eventually allocated to, work in the subdivision for which his ability best suits him. Since, however, the success of any special work in the Air Force will depend upon a sound knowledge of the conditions of life of the effective personnel, medical officers will not be earmarked for one of the special subdivisions of the medical service until selected for the higher or Grade A pay (vide Appendix II).

4. While it would be impossible for the Air Council to give any guarantee that an officer will be employed continuously on a line of work in which he happens to have acquired special knowledge, the endeavour of the Administration will be in this direction.

5. It should also be generally realized by medical officers that the direction, or administration, of the divisions and subdivisions will be entrusted to those whose special knowledge of the subject or subjects will ensure the best technical control.

6. It will be observed (para. 21 and Appendix II) that the system of charge pay as in vogue in the Navy and Army Medical Services has been replaced in the Air Force Medical Service by a system of special merit pay. An officer once selected for Grade A pay will draw such pay for a probationary period of one year, and if then confirmed, will, except in the case of incompetence or misconduct, continue to draw this pay however employed until promoted to the next higher rank, when he will be placed in Grade B until again selected for Grade A.

7. An officer appointed in charge of a hospital or other unit which in the navy or army would carry charge pay, or which previously was held by an officer drawing Grade A pay, is not thereby entitled to Grade A pay; nor will seniority of itself entitle an officer to Grade A pay.

8. A limited number of commissions as administrative officers (medical) will be available, and warrant officers and non-commissioned officers transferring from the R.A.M.C. or entering the R.A.F.M.S. direct will be eligible for promotion to these appointments.

9. Particular attention is drawn to the difference between the terms "transferred" (as applied to temporary officers), and "attached"; the former implies relinquishment of any temporary commission held at the time of transfer; the latter is analogous to seconded service and enables the officer in question to return to his original service at the end of a stated period without loss of seniority or pension in respect of such attachment.

10. Permanent commissions will not be granted at present and the conditions of service and scales of pay set out in this memorandum will be subject to revision at the end of the war, or before that time if the Air Council so decide. When a permanent Air Force Medical Service is established previous experience as medical officer in the R.A.F. will be taken into account in granting such permanent commissions.

Duration of Service.

11. No person will by reason of attachment or transfer to the R.A.F. become liable for service with the forces for a longer period than that for which he would have been liable had such attachment or transfer not taken place.

12. Subject to para. 11, permanent officers of the Royal Navy including officers who have joined the Reserve of Medical Officers from the permanent list, and Royal Naval Volunteer Reserve medical officers, will be *attached* to the R.A.F. for a period of three years or the duration of the war, whichever is the longer. Regular and Territorial officers or members of the Special Reserve of the R.A.M.C. will be *attached* to the Royal Air Force for the duration of the war (7070/18).

[*Note.*—Officers who are seconded from the navy and army will receive assurance in writing that their prospects of promotion by selection in their own service will not be prejudiced.]

13. Subject to para. 11, temporary medical officers of the Royal Navy or Royal Army Medical Corps, and dental surgeons, will be *transferred* to the Royal Air Force for the remainder of the period for which they were liable to serve with the Royal Navy or R.A.M.C., as the case may be.

14. Subject to para. 11, R.A.M.C. orderlies will be transferred to the R.A.F. for the remainder of the period for which they were liable to serve with the R.A.M.C.

Rank.

15. Promotion to ranks above that of captain in the R.A.F. Medical Service will be by selection to fill vacancies in the establishment.

16. On attachment or transfer to the R.A.F. officers will receive temporary commissions in the R.A.F., with rank corresponding to their rank, substantive or temporary, prior to attachment or transfer, as shown in Appendix I.

17. An officer attached to the R.A.F. receiving promotion in the navy or army during such attachment will receive corresponding rank in the R.A.F. and be held supernumerary to the establishment until a vacancy occurs in such higher rank in the R.A.F. for which he may be selected.

18. Officers lent to the R.A.F. becoming attached or transferred to the R.A.F. will receive seniority in the R.A.F. from April 1st, 1918, and will be placed upon the R.A.F. list in order, based on their seniority in the service from which they are attached or transferred.

19. R.A.M.C. orderlies transferring to the R.A.F. will be graded in ranks corresponding to their rank in the R.A.M.C.

Pay, Allowances, and Gratuity.

20. Officers attached to the R.A.F. will be paid at the rates set out in Appendix II (Grade B) subject to reserved rights as in para. 29.

21. A proportion of officers will be selected for pay at the higher rate (Grade A) on the recommendation of the Medical Administrative Committee. The Committee will take into consideration—

(*a*) Length of service.
(*b*) War or specially meritorious service with the R.N.A.S. or R.F.C.
(*c*) Medical qualifications.
(*d*) Any other special service or qualification possessed by the officer in question.

The names of all officers transferred or attached will be periodically considered for selection to Grade A.

22. Medical officers attached to the R.A.F. will receive allowances on the scales laid down for corresponding ranks in the R.A.M.C. These allowances may be varied from time to time to meet the conditions prevailing in the R.A.F., but are at present similar to those issued to army officers.

23. Temporary medical officers, both R.N.A.S. and R.A.M.C., transferred to the R.A.F., if not above the rank of captain, will be paid at rates similar to the rates paid to temporary medical officers of the R.A.M.C.—namely, 24s. a day inclusive of all allowances except—

(*a*) Ration allowance when rations are not issued in kind.
(*b*) Travelling allowances and expenses when travelling on duty.

24. Temporary medical officers with the rank of major (or senior to major) transferred to the R.A.F. will receive pay at the rates for medical officers as shown in Appendix II, Grade B or A, as the case may be. This also applies to promotions after transfer.

25. Dental surgeons transferred to the R.A.F. will receive pay at rates similar to the rates paid to dental surgeons in the army inclusive of all allowances except travelling allowances and lodging, fuel and light allowances when quarters are not found, and they are required to live away from their usual place of residence in civilian life.

26. Temporary medical officers of the R.A.M.C. transferred to the R.A.F. will receive such proportion of their annual gratuity of £60 as has accrued up to the date of transfer, and will hereafter receive a gratuity at the rate of £60 for each year's service in the R.A.F. This gratuity is awarded under the terms of the contract set out in Appendix III.

27. R.A.M.C. orderlies transferred to the R.A.F. will receive pay at the rates they were receiving in the R.A.M.C. as corps pay and basic pay. A special rate of pay for R.A.F. medical orderlies is under consideration.

28. Temporary medical officers of the Royal Navy transferred to the R.A.F. will receive a gratuity of £60 for each year's

satisfactory service (vide Appendix III) with the R.A.F., subject to a minimum of two months' pay at R.N. rates.

29. While it is impossible to pledge the future as to the prospect of individuals, and while reasonable latitude must be allowed to the Air Council to deal with any privilege or emoluments which are not subject to vested rights, it may be taken as a general principle that no person will suffer loss of emolument or pension by reason of attachment or transfer to the R.A.F.

30. In pursuance of this principle, any person becoming attached or transferred to the R.A.F. will continue at the rate of pay he was already receiving where such rate was higher than the rates set out in this memorandum.

31. An outfit allowance of £25 will be granted to officers becoming attached or transferred from the Royal Navy, and £10 in the case of officers becoming attached or transferred from the Army. Officers becoming attached or transferred from the Royal Navy with the rank of field officer in the R.A.F. will receive an outfit allowance of £30.

32. Officers having already received an allowance for khaki uniform in the Royal Navy will receive only £10.

APPENDIX I.

Rank in R.N.	Rank in R.A.M.C.	Rank in R.A.F.
—	Lieutenant.	Lieutenant.
Surgeon.	Captain.	Captain.
Staff Surgeon.	Major.	Major.
Fleet Surgeon.	Lieut.-Colonel.	Lieut.-Colonel.

APPENDIX II.

Daily Pay for Medical Officers (excluding Temporary Medical Officers under the Rank of Major).

Rank.	Grade B.	Grade A.
Lieutenant	14s.	—
Captain	16s. and 19s.	22s.
Major	24s.	27s.
Lieut.-Colonel	35s.	40s.

APPENDIX III.

The form of contract (A.M. Form 161) "for gentlemen subject to the Military Service Acts" is in the following terms:

To His Majesty's Principal Secretary of State for the Royal Air Force.

I ..... of ..... being qualified to practise medicine and surgery, and being registered under the Medical Act now in force in the United Kingdom, hereby offer and agree if accepted by you to serve at home or abroad as a Surgeon to His Majesty's Forces with the temporary rank of Lieutenant in the Royal Air Force while so employed, on the following conditions:

1. The period of my service hereunder shall commence as from the day on which I shall commence duty, and shall continue until the termination of the present emergency, or until my services are no longer required, whichever shall first happen.

2. My pay shall (subject as hereinafter appears) be twenty-four shillings a day for the said period, such rate to be inclusive of all money allowances, except the regulated Travelling Allowances and expenses when travelling on duty.

3. In addition to such pay, I shall receive a free passage to any country abroad to which I may be sent, and (subject as hereinafter appears) a similar free passage back to England.

4. I shall receive free rations, or an allowance in lieu thereof, and when considered necessary for the performance of my duties the use of a Government horse and forage.

5. During the said period I will devote my whole time and professional skill to my service hereunder, and will obey all orders given to me by superior Air Force, Naval or Military Officers.

6. In case I shall have completed my service hereunder to your satisfaction in all respects, I shall receive at the end of the said period a gratuity of £60 sterling for each 12 months or part thereof, but in case I shall in any manner misconduct myself, or shall be (otherwise than through illness or unavoidable accident) unfit in any respect for service hereunder, of which misconduct or unfitness you or your authorized representative shall be sole judge, you shall be at liberty from and immediately after such misconduct or unfitness to discharge me from further service hereunder, and thereupon all pay and allowances hereunder shall cease, and I shall not be entitled to any free passage home or gratuity.

DR. ABRAHAM JACOBI has accepted the office of honorary president of the Friends of American Democracy, an association of Americans, mostly of German descent, who are in favour of the overthrow of the Hohenzollern rule. Dr. Jacobi, who is a leading authority on children's diseases, was born at Minden in Westphalia on May 6th, 1830. He took the degree of M.D. at Bonn in 1851, and soon afterwards got into trouble with the Government on account of his political views. After an imprisonment which lasted two years he went to America where he became professor of paediatrics in the New York College of Physicians and Surgeons.

MEDICAL BENEFIT REGULATIONS, 1918.

THE National Health Insurance Joint Committee, acting jointly with the Insurance Commissioners, has made draft regulations providing that the Medical Benefit Regulations, 1914, which relate to the power of Insurance Committees to alter the terms of their agreements with practitioners and persons supplying drugs or appliances, shall continue in force during the year 1919.

It is also provided that where, by reason of his being employed in the medical service of the Naval, Military, or Air Forces of the Crown, or by reason of his having undertaken civil medical practice under arrangements made or sanctioned by the Director-General of National Service, a practitioner on the panel is, during the month of November, 1918, unable personally to practise within the area in which he has undertaken treatment, an insured person on the list of such a practitioner shall not be entitled to select another practitioner or method of treatment at the end of the medical year ending on December 31st, 1918, unless, in addition to giving notice to the Committee in the manner and within the period required by paragraph (1) of Article 30 of the principal regulations, he satisfies the Medical Service Subcommittee of the Committee that he has reasonable grounds for desiring to be removed from the list of such a practitioner, and paragraphs (1) and (3) of Article 30 shall be modified accordingly. But nothing contained in this provision will affect the right of an insured person under Articles 26 and 45 of the principal regulations to be transferred to the list of another practitioner on the panel subject to the conditions contained in those Articles.

Obituary.

CHARLES DEVEREUX MARSHALL, F.R.C.S.ENG.,

Surgeon to the Royal London Ophthalmic Hospital; Staff Surgeon R.N.V.R.

WE much regret to record the death from cholera at the Colaba War Hospital, Bombay, on September 14th, of Staff Surgeon Charles Devereux Marshall, R.N.V.R., the well known ophthalmic surgeon. He was born in 1867 at Portsmouth and was the younger son of the late W. Marshall, solicitor of that town. He was educated privately and studied medicine at University College Hospital, obtaining the M.R.C.S. and L.R.C.P. diplomas in 1890 and the F.R.C.S. two years later. After qualifying he held the posts of demonstrator of anatomy in the medical school of University College Hospital and prosector of anatomy at the Royal College of Surgeons, house-surgeon to University College Hospital, and ophthalmic house-surgeon and curator of the museum at the Royal London Ophthalmic Hospital, Moorfields. He was later appointed assistant surgeon, and subsequently surgeon, to Moorfields, and ophthalmic surgeon to the Victoria Hospital for Children at Chelsea. During these years he built up a large consulting ophthalmic practice in London. He was a very skilful operator and a good teacher and lecturer. In 1904 he joined the Royal Naval Volunteer Reserve; he was called up for service on August 2nd, 1914, and joined H.M.S. *Euryalus* at Chatham. In this ship he was present at the battle of Heligoland Bight, and served in the defence of home waters for some months afterwards. In 1915 he was present at the historic landing at Suvla Bay and throughout the Gallipoli operations until the evacuation. After this he saw much service in the East Indies, and was present at some of the operations in Mesopotamia, going up the Tigris as far as Bagdad in the river gunboats. At the time of his death he was serving in H.M.S. *Dalhousie*.

Charles Devereux Marshall was a fluent writer, and made many contributions to the literature of ophthalmology. He was a valued contributor to the columns of the BRITISH MEDICAL JOURNAL, and was the English correspondent to various foreign ophthalmic journals. In 1912 he published a work on diseases of the eyes—a thoroughly practical textbook for students. At the annual meeting of the British Medical Association at Ipswich in 1900 he was secretary of the Section of Ophthalmology, and he was vice-president of that Section at the Sheffield

meeting in 1908. He was an enthusiastic yachtsman, and sailed his own yacht for many years.

Dr. F. W. EDRIDGE-GREEN, Chairman of the Ophthalmic Board, Central London Recruiting Boards, writes: It is with the deepest sorrow I have just heard of the death of Mr. Devereux Marshall. I have never met a man for whom I felt more respect. Though I knew him intimately I did not know how extremely brilliant he was as an operating surgeon until I became an ophthalmic surgeon in the National Service, and on several occasions I have shown to various members of the boards cases of his as absolutely perfect results of operation for cataract, etc. He did for me the experiment which demonstrated the diffusion of the visual purple into the fovea—an experiment of such superlative difficulty that nearly every one declared it to be impossible. His small book on diseases of the eye is probably the best that has been written for the general practitioner.

ROBERT JESSOP HAMILTON, F.R.C.S.EDIN.,
Ophthalmic Surgeon, Royal Southern Hospital, Liverpool.

THE sudden death of Mr. R. J. Hamilton, on September 16th, came as a shock to his professional brethren and his many friends. He passed away in his sleep at Heswall, where he had been residing during the summer months, at the same time carrying out his professional duties. Mr. Hamilton was the son of the late Mr. Robert Hamilton, at one time surgeon to the Royal Southern Hospital. For over twenty-one years he practised ophthalmology, and, in addition to the Royal Southern Hospital appointment, was ophthalmic surgeon to the Victoria Hospital, Liscard, and to the Southport Infirmary. As a member of the Liverpool Medical Institution Mr. Hamilton frequently took part in discussion on eye cases recorded and shown at the meetings of the members. He held the post of vice-president in 1915–1916, and filled the office of treasurer to the institution. Mr. Hamilton was of a quiet disposition, and took no active part in public matters; as a churchman he was much interested in the building of the new cathedral. The funeral took place at Heswall Parish Church. Many of his colleagues of the hospitals to which he was attached and friends were present to pay their last tribute to one who had endeared himself by his kindly thoughts and actions to many who had sought his professional aid. The loss of his only son in March this year in the war was a great blow for him. Mr. R. J. Hamilton was a widower, and leaves two daughters and many friends to mourn his loss and cherish the memory of a life well spent.

WE regret to have to record the death of JOHN MERRITT CHISHOLM, M.A., M.D., on September 12th, from pneumonia, which attacked him on a visit to his relatives in Edinburgh. Dr. Chisholm was one of the oldest practitioners in Woolton, where he settled down in practice thirty-six years ago. He qualified M.R.C.S. in 1878, and took his M.D. degree in 1882. He was visiting medical officer to the Liverpool Convalescent Hospital at Woolton and police surgeon for the district. Dr. Chisholm's extensive practice prevented him from associating himself with medical matters outside purely professional work. By nature of a quiet disposition, he was not as well known to his professional brethren as would have been expected in one who had been so long in practice. A memorial service was held in Woolton Church at the time of his funeral in Edinburgh. Representatives of the institutions with which Dr. Chisholm was identified and many friends were present in Woolton Church to pay their last respect to one whom the Venerable Archdeacon Howson described "a wise doctor, a kind friend, and consistent Christian." Dr. Chisholm was unmarried.

WE regret to announce the death of CLARA HIND, L.R.C.S., L.R.C.P.Edin., of Ockley Sanatorium, Surrey. This very active medical woman fulfilled her own ideal by "dying in harness." She was one of the energetic pioneers who trained at the Royal Free Hospital and the London School of Medicine for Women in the latter years of the last century. Earlier in life Miss Clara Hind was a hospital nurse at Nottingham, where she remained for some years after completing her training, and was then appointed matron of the Clapham Maternity Hospital. For five years she held this post, and her excellent nursing and management did much to win the confidence and love of the patients, while her help in the training of women medical students and midwives in midwifery was invaluable. She never lost her touch with this hospital, and later became a physician to the out-patient department, and also a trusted and valued member of the committee, by whom her loss will be deeply felt. From the date of qualifying as a doctor in 1901 she devoted herself especially to the treatment of tuberculous patients in open-air sanatoriums. She was resident physician for some years at Rudgwick Sanatorium and was for the last fifteen years the resident doctor at her own sanatorium at Ockley. She passed away on September 16th, after a severe operation, deeply regretted by relatives, friends, and patients, many of whom were present at her grave in the quiet country churchyard at Ockley.

DR. EDWIN HARRY DAVIS, J.P., of West Hartlepool, past president of the North of England Branch of the British Medical Association, died on September 12th, after a long and painful illness. He received his medical education at St. Thomas's Hospital, and obtained the M.R.C.S. diploma in 1873, and the L.S.A. in 1874. He began practice in West Hartlepool thirty-five years ago, and from the first took a leading part in the life of the town. For many years he was a member of the old School Board and its successor the Education Committee, and of the Board of Guardians, and in 1893 he was made a Justice of the Peace for the borough of West Hartlepool. He was consulting surgeon to the Cameron Hospital, and had held the office of president of the Northumberland and Durham Medical Society. Dr. Davis had a large practice, and exercised much influence in the social and religious life of the district.

THE death is announced of Dr. HENRY BEALE COLLINS, for twenty-six years medical officer of health for Kingston-on-Thames and president of the former Thames Valley Branch of the British Medical Association. He was born in 1851. After studying medicine at King's College Hospital he qualified M.R.C.S. and L.S.A. in 1873, and joined the Royal Navy as a surgeon, holding for a time the post of assistant instructor in naval hygiene at Haslar. He served with the Perak expedition in 1875, taking charge of a hospital for invalids, and he was medical officer in the *Cockatrice* at Galatz from 1878 to 1880. After retiring from the navy he devoted himself to public health. He was twice president of the Home Counties Branch of the Incorporated Society of Medical Officers of Health and a member of the council of the Institute of Public Health. Sixteen years ago he published a small work on the hygiene of schools and scholars. He held a commission as major *à la suite* in the sanitary section of the R.A.M.C.(T.F.).

THE death occurred on September 22nd, at a nursing home in Glasgow, of Major ALEXANDER JOHNSTON, M.D., R.A.M.C. He graduated in medicine in the University of Glasgow in 1883, and was for twenty-two years physician superintendent of the city hospitals of the Glasgow Corporation. He also held the office of deputy medical officer of health for Glasgow, and lecturer on infectious diseases in the University. He published several papers and reports on epidemiology, and was recognized as an authority on infectious diseases. In April, 1915, he placed his services as a specialist at the disposal of the War Office, and was subsequently appointed officer commanding the military isolation hospital at Aldershot, with the temporary rank of major. His widow is the daughter of Dr. Richard Allan, M.O.H. Dumbarton.

DR. PAUL LUCAS-CHAMPIONNIÈRE, editor of the *Journal de médecine et de chirurgie pratiques*, died suddenly a short time ago at La Baule. He was the son of Jules Lucas-Championnière, member of the Institute of France and surgeon to the Paris Hôtel-Dieu, who took a leading part in the introduction of Listerism among his fellow-countrymen. Dr. Just succeeded his father, who founded the journal in 1830, in the editorial chair, which he

occupied from 1870 till his death in 1913, when his place was taken by the representative of the third generation of the family.

DR. LEOPOLD MEYER of Copenhagen, who died recently at the age of 65, was a distinguished obstetrician and gynaecologist and a recognized authority on abdominal surgery. He was the author of a treatise on the pathology of pregnancy, published in 1906, and a textbook on midwifery, which appeared in 1914.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

THE Raymond Horton-Smith Prize for the best thesis for the degree of Doctor of Medicine during the academical year has been awarded to Frederick George Chandler, M.A., M.D.; subject, Empyema. *Proxime accessit*, William Parry Morgan, M.A., M.D.; subject, Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis.

Medical News.

"OUR DAY," which is set aside each year for a great effort on behalf of the British Red Cross and Order of St. John, will be held on Thursday, October 24th.

THE opening of the new session at King's College Hospital Medical School (University of London) will take place on Tuesday, October 1st, at 3.15 p.m., under the presidency of Viscount Hambleden. Surgeon-General Sir W. Watson Cheyne, Bt., F.R.S., Emeritus Professor of Clinical Surgery, will receive the scholars and prizemen, and deliver an introductory address. Academic dress will be worn.

THE opening of the winter session of the Middlesex Hospital Medical School will take place on Tuesday, October 1st, at 3 o'clock, when Lieut.-General T. H. J. C. Goodwin, C.B., C.M.G., D.S.O., Director-General Army Medical Service, will occupy the chair. The prizes will be distributed by the Dowager Countess Brassey, and Dr. Browning, director of the pathological laboratories, will deliver an address on the importance of research work in connexion with national health.

THE inaugural address for the ensuing session at the London (Royal Free Hospital) School of Medicine for Women (University of London) will be delivered by Miss A. Maude Royden at 8, Hunter Street, Brunswick Square, W.C.1, on Tuesday, October 1st, at 3.30 p.m. Academic dress will be worn.

A MEETING of the Society for the Study of Inebriety will be held on Tuesday, October 8th, at 4 p.m., in the rooms of the Medical Society of London, 11, Chandos Street, Cavendish Square, W.1, when Major Robert B. Wild, M.D., F.R.C.P., Pro-Vice-Chancellor of the Victoria University of Manchester and Professor of Materia Medica and Therapeutics, will open a discussion on the pharmacology of alcohol. All interested in the subject are invited to be present.

A CREMATION library, consisting of books, periodicals, pamphlets, and articles, formed by the Cremation Association of America, was accepted by the John Crerar Library, Chicago, in January, 1915. Since then the library has received from the association, or has acquired in other ways, a large additional number of publications. The titles of these are enumerated in a list which is the fifteenth of the bibliographical publications issued by the library.

THE *Journal of General Physiology* is the title of a new bi-monthly periodical, the first number of which was issued by the Rockefeller Institute for Medical Research, New York, on September 20th. It is intended to serve as an organ for the publication of papers dealing with the investigation of life processes from a physio-chemical point of view. The editors are Dr. Jacques Loeb, of the Institute, and Professor W. J. V. Osterhout, of Harvard.

THE poison of the Manchurian scorpion causes haemolysis, and S. Iwano, by making extracts from the pulped terminal joint of the tail, in which it is contained, finds that two poisonous proteins can be obtained, the one being extracted by distilled water and the other by dilute acetic acid. The toxicity is destroyed by the action of pepsin, trypsin, potassium permanganate, and calcium hypochlorite.

As already announced in the JOURNAL, a meeting of the medical profession will be held at Steinway Hall, Wigmore Street, London, W., on Tuesday, October 1st, at 5.30 o'clock, with the object of furthering the election of representative medical men, of any party, to the House of Commons, so that the considered views of the profession may be voiced in that assembly. Sir Henry Morris will take the chair, and the meeting will be addressed by Dr. Addison, Minister of Reconstruction. All members of the medical profession are invited to attend.

DURING the fiscal year ending June 30th, 1919, the United States Government will expend £200,000 upon the control of venereal diseases. The work will be carried out through the various State Boards of Health. It will include the obtaining of reports of infection, the control of infected persons so as to prevent dissemination of the disease, the establishment of free venereal clinics, the suppression of vicious conditions which favour the spread of infection, and systematic education of the public as well as those affected with the disease. A Division of Venereal Diseases has been established in the Bureau of the Public Health Services. Authority is given to this service to regulate the interstate travel of infected persons.

IT is stated in the *Wiener medizinische Wochenschrift* that the Ministry for War, having learnt that several deaths have followed the use of the sinusoidal current (Sinusstrom) in the treatment of war neuroses, has forbidden its use in military hospitals. The faradic current may alone be employed in suitable cases. It appears that the fatalities observed were as sudden as chloroform fatalities, and that they occurred quite early—that is, soon after the current was applied. Status lymphaticus has been found at the necropsies on such cases.

A CONFERENCE organized by the National Baby Week Council was held at Bedford College for Women, London, on September 18th, to inaugurate a propaganda campaign in support of the immediate establishment of a Ministry of Health. Dr. Eric Pritchard, Lord Willoughby de Broke, Dr. Saleeby, and others expressed the desire of the council to create a strong public opinion with a view to giving speedy effect to the promised introduction of a Ministry of Health Bill, and insisted that the country would not tolerate the opposition of private or vested interests or departmental jealousies to the immediate realization of its demands and hopes. A resolution was carried unanimously calling upon members and local committees to pursue an active campaign in favour of such a Ministry.

THE Board of Education has issued Regulations (Cd. 9154), under which grants to schools for mothers in England and Wales will be made by the Board during each financial year. A school for mothers is held to be primarily an educational institution providing training and instruction for the mother in the care and management of infants and little children. In determining a grant the Board will take into account the expenditure incurred since April 1st, 1917, on the provision of food for expectant mothers and nursing mothers, and for children under 5 years of age, where such provision is certified by the medical officer of the centre or by the medical officer of health to be necessary and where the case is necessitous. The grant payable in a financial year will be assessed on the basis of work done by the institution during the previous year. In fixing the rate of grant, the scope, character, and efficiency of the work will be taken into consideration. In this connexion the Board will have regard to the provision made (1) for co-ordinating the work with that of a similar institution in the same district, of maternity centres, baby clinics, or infant dispensaries, and of the school medical service and the sanitary authority, and (2) for keeping records of attendances and domiciliary visits.

THROUGH the liberality of a group of New England manufacturers, who appreciate the importance of studying diseases of occupation and improving the conditions of labour, the Harvard Medical School has made arrangements for courses of instruction in industrial hygiene, with facilities for the investigation of problems of industry. Boston offers exceptional opportunities for work of this kind, as a great variety of industries are found in its immediate neighbourhood. The instruction and research work will at first be principally in the domains of chemistry, physiology, and medicine, and in these subjects new departments will be created. Instruction in the pharmacological, sanitary, and social aspects of industry will be given, to supplement the work of the school of public health. Opportunities will be open to three separate groups of workers—those engaged in research, medical officers of large industries, and inspectors of industries.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

The postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

LETTERS, NOTES, ETC.

MANGANESE A POISON.

DR. JAMES GAIRDNER (M.O.H. Crieff), to whose views we made a brief allusion in this column last week, writes: So long ago as 1894 I certified manganese as the primary cause of a young girl's death. Prior to this I had discovered that manganese fumes were emitted from the chimneys of the blacksmith and the plumber during the process of melting the metals they use. The chimneys of these industries never require sweeping, and the metallic fumes, along with the products from the combustion of coal, such as benzene and naphthalene, go right out to the air. Just as the Gulf Stream is an oceanic current, these fumes form an atmospheric current and travel (especially in the case of the blacksmith) a considerable distance. They are wafted along by prevailing winds and, gathering moisture, ultimately form a green deposit on wooden fences and trees and the slates and stonework of houses. The deposit in the case of the blacksmith is a bright green and that of the plumber a darker green. The vegetable part of the deposit under the microscope is seen to consist of cells of a very simple character. I have not seen moss near it. The opinion I formed at that time was that manganese given by the mouth seemed rather inert, but that when injected subcutaneously or inhaled it became poisonous and was cumulative and the symptoms like lead, zinc, and arsenic.

CRÊPE PAPER BANDAGES.

WE have received from the Dennison Manufacturing Co., Ltd. (Kingsway, W.C.), samples of their crêpe paper bandages which have been introduced owing to the necessity for conserving cotton, of which the shortage of supply is becoming acute. The bandages have considerable elastic stretch, and will bear a greater strain than would in practice be applied. They are made in the regular widths—1, 2, 2½, 3, and 4 in., but in lengths of 15 yards; each bandage is provided with a strip of gummed paper for fastening, though on slitting up the end of the bandage and knotting the streamers they will tie into a firm bow, and the crêpe paper also lends itself to pinning. Each roll of bandage is wrapped in tissue paper and sealed. It is claimed that the bandages will stand either baking or steam heat without disintegration or appreciable deterioration. The cost is approximately two-fifths that of the cotton. This bandage has been on the American market for some six months, and is in current use in several of the largest American hospitals. A contract for several millions of the bandages has been made with the Surgeon-General's Department of the American army for use overseas, and instructions have been issued to medical officers in charge of base hospitals to the effect that at least 50 per cent. of these crêpe paper bandages must be used in place of cotton bandages.

THE SHRIEVAL CHAIN.

MR. UNDER-SHERIFF E. J. TRUSTRAM, M.A., sends us the following description of the shrieval chain and badge which were presented on September 26th at the Apothecaries' Hall to Colonel William R. Smith, M.D., D.L., who will be sworn in as a Sheriff of the City of London at the Guildhall to-day (September 28th): The chain is composed of three rows of links, reproductions of an old design. At intervals are placed Tudor roses, the badge of the Lieutenancy, encircling shields on which, in correct heraldic blazon, are the Arms of The Apothecaries' Company, The Middle Temple, Aberdeen and Edinburgh Universities, King's College, and the Metropolitan Asylums Board. At the back of the chain appear the Arms of Holborn, with supporters; of this borough the Sheriff is an ex-Mayor. The chain is looped up in front by a badge composed of the City Arms and those of the Sheriff side by side, surmounted by crested helmets and encircled with a richly carved lambrequin enamelled in the tinctures of the shields.

OBLITERATION OF THE SUPERIOR VENA CAVA.

THIS rare condition was first recorded in 1808, and in 1855 Oulmont collected nineteen cases, and since then there have been every year on an average one or two communications on obliteration due to compression or destruction of the superior vena cava. Favre in a recent paper records four cases of obliteration due to syphilitic inflammation of the vein walls, and not to primary thrombosis with organization. In the past obliteration of this vein has usually been ascribed mainly to pressure, and in two of Favre's cases there were factors exerting, or capable of exerting, pressure—namely, an aneurysm and syphilitic mediastinitis in one, and periostitis of the sternum in the other, but in these instances microscopic examination of the vein wall showed inflammation. In the other two cases syphilitic inflammation of the vein wall produced secondary thrombosis. None of the cases were absolutely correctly diagnosed, being regarded as mediastinal tumour (two), nephritis, and aortic disease.

WINTER QUARTERS.

The Journal of an Army Surgeon, by Charles Boutflower, is a record of personal experiences in the Peninsular War. He left England in August, 1809, and joined his regiment at Badajoz a month later; in 1812 he was appointed staff surgeon under Hill. During the three years and a half he served in the Peninsula Boutflower saw much of war; his first notable experience was the retreat to Torres Vedras, but the depressing effect of that strategic manœuvre was brightened by the victory at Busaco. In 1812 he was present at the capture of Ciudad Rodrigo, the siege of Badajoz, and the battle of Salamanca. Boutflower was strongly opposed to winter operations on the ground that they are certain to make the troops "absolutely inefficient for any active operations in the spring." Though Wellington was held in the highest respect by his officers, his disregard of the traditional rules of warfare in this matter was regarded by many of them with a horror equal to their wonder. They apparently did not know that, before Wellington, Napoleon had broken the tables of the consecrated laws of warfare. An old Austrian general seriously complained of the young man who "carried on" without going into winter quarters at the proper time. What would those old pipeclay doctrinaires have thought of modern campaigning?

FEES AND PRICES IN GERMANY.

A GERMAN medical man, writing in the *Aerztliche Mitteilungen*, has complained of the inadequacy of the increase of doctors' remuneration as compared with the increase of prices generally. While fees for private practice have increased by about 50 per cent. and for contract practice about 20 per cent., the cost of instruments, dressings, coal, and fruit has increased by 75 to 175 per cent. The cost of potatoes and paper has increased by 200 per cent., of leather, meat, and chocolate by 300 per cent., of butter and eggs by 600 per cent., of milk by 700 per cent., of clothing, hams, fats, oils, cocoa, and tea by 1,000 to 1,500 per cent., and of wooden articles by 3,000 per cent.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

Subscriptions to the Second Appeal.

The following subscriptions have been received up to Monday last, September 23rd:

	£	s.	d.		£	s.	d.
Dr. G. Vernon Bull ...	2	2	0	Dr. Alfred Cox (monthly)	1	1	0
Captain J. S. Clarke, R.A.M.C.	3	3	0	Captain E. L. Lilley, R.A.M.C.(T.)	1	1	0

Subscriptions to the Fund should be sent to the Treasurer, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W.1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

FUND FOR THE FAMILY OF THE LATE DR. KITE.

DR. ARTHUR E. GILES asks us to acknowledge an additional contribution received for this fund from "H. C. V.," Kamshet, India, £1 1s.

THE appointment of certifying factory surgeon for Clitheroe (Lancs) is vacant.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0	6	0
Each additional line	0	0	9
Whole single column	4	0	0
Whole page	12	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.